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**A DDC BIBLIOGRAPHY ON
COMPUTERS IN INFORMATION SCIENCES**

(Information Sciences Series)

VOLUME I OF III VOLUMES

DDC-TAS-68-49

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OCTOBER 1968

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U N C L A S S I F I E D A N D U N L I M I T E D

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Alexandria, Virginia 22314

U N C L A S S I F I E D A N D U N L I M I T E D

P R E F A C E

Any discussion of information systems of the future predicts dynamic interactions between the user and the computer. This bibliography compiles references, cataloged by DDC since 1953, that deal specifically with the role of computers in the information sciences.

The 488 unclassified and unlimited references are divided into two volumes. Volume I contains 249 references grouped under two major headings: Time Shared, On-Line, and Real Time Systems; and Computer Components. Volume II contains 239 references grouped under three major headings: Artificial and Programming Languages, Computer Processing of Analog Data, and Computer Processing of Digital Data. These headings correspond directly with those of the Panel on Information Technology, Committee on Scientific and Technical Information, Federal Council for Science and Technology.

The references are arranged in accession number (AD number) sequence within each heading. Four indexes, AD-Numeric, Corporate Author/Monitoring Agency, Personal Author, and Contract, are appended for each volume to facilitate access to references.

An unclassified and limited version has been compiled and
will be announced in the Technical Abstract Bulletin (TAB).

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ROBERT B. STEGMAIER, JR.
Administrator
Defense Documentation Center

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TIME SHARED, ON-LINE AND REAL TIME SYSTEMS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-285 851

MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS
LAB

A TIME SHARING SYSTEM FOR THE PDP-1 COMPUTER (U)
IV YATES, JOHN E. I

UNCLASSIFIED REPORT

DESCRIPTORS: *DIGITAL COMPUTERS, *PROGRAMMING (U)
(COMPUTERS), SCHEDULING

A SYSTEM FOR TIME-SHARING A PDP-1 DIGITAL COMPUTER
WITH SEVEN TYPEWRITERS, TWO PAPER TAPE PUNCHES,
TWO PAPER TAPE READERS, AND TWO CRT DISPLAYS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-414 544

THOMPSON RAND WOODBRIDGE INC CANOGA PARK CALIF
AN ON-LINE COMPUTING CENTER. (U)

DESCRIPTIVE NOTE: FINAL REPT., 11 FEB 62-11 FEB 63,
J10P FRIED, GURTON D. I

CULLER, GLEN J. I
MONITOR: RADC

TDR 63 160

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, DIGITAL
COMPUTERS), (+DIGITAL COMPUTERS, DATA PROCESSING
SYSTEMS), PROGRAMMING (COMPUTERS), MATHEMATICAL LOGIC,
COMPUTER LOGIC (U)

IDENTIFIERS: INFORMATION PROCESSING, ON-LINE
COMPUTING, 1963 (U)

AN ON-LINE COMPUTING SYSTEM HAS BEEN DEVELOPED
WHICH ALLOWS DIRECT USE OF A HIGH SPEED DIGITAL
COMPUTER BY MATHEMATICIANS AND SCIENTISTS IN THEIR
SPECIALIZED FIELDS. THIS REPORT DESCRIBES THE
SYSTEM IN DETAIL FROM A USER'S POINT OF VIEW. FOR
REFERENCE PURPOSES, THE REPORT INCLUDES A LISTING OF
ALL COMPUTER PROGRAMS USED IN THE SYSTEM.
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-420 516

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
REAL-TIME COMPUTER STUDIES OF BARGAINING BEHAVIOR:
THE EFFECTS OF THREAT UPON BARGAINING, (U)

SEP 63 12P SHURE, GERALD H. 1

NEEKER, ROBERT J. 1

REPT. NO. SP1143 000 01

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES:

DESCRIPTORS: (+SOCIAL COMMUNICATION, PSYCHOLOGY),
(+BEHAVIOR, FOREIGN POLICY), (+POLITICAL SCIENCE,
EMOTIONS), OPERATIONS RESEARCH, SIMULATION,
COMPUTERS (U)

IDENTIFIERS: 1963, BARGAINING, THREAT, INTERNATIONAL
RELATIONS, HOSTILITY, REAL TIME (U)

REPORTS ON A COMMUNICATION GAME, IN WHICH THE
COMPUTER IS USED AS AN EXPERIMENTAL TOOL FOR ON-LINE
ANALYSIS, UMPIRING, CONTROL AND RECORDING OF SUBJECT
BEHAVIOR. ALSO REPORTS THAT THE COMPUTER IS
PROGRAMMED TO AID IN THE COLLECTION AND ASSESSMENT OF
SUBJECTIVE DATA - TO PROBE SUBJECTS' AS TO THEIR
INTENTIONS AND PERCEPTIONS AT CRITICAL POINTS IN THE
DEVELOPMENT OF THE BARGAINING PROCESS. STATES THAT
THESE DATA SHOULD SUPPLANT A GREAT DEAL OF THE NEED
TO SPECULATE ABOUT THE PATTERNS OF INTENTION AND
PERCEPTIONS WHICH PRODUCE THE OVERT RESULTS OBTAINED.
(AUTHOR) (U)

UNCLASSIFIED

A00396

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CDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-425 527

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
A REPORT ON A LARGE-SCALE TIME-SHARING SYSTEM. (U)

NOV 63 18P SCHWARTZ, JULES I. I

REPT. NO. SP1361

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PAPER PRESENTED AT THE DIGITAL
EQUIPMENT USERS SOCIETY, 18 NOV 63.

DESCRIPTORS: (COMPUTERS, PROGRAMMING (COMPUTERS)),
DESIGN, INPUT-OUTPUT DEVICES (U)

IDENTIFIERS: AN/FSQ-32, 1963, TIME-SHARING SYSTEM (U)

THE SYSTEM DEVELOPMENT CORPORATION, UNDER
ARPA SPONSORSHIP, HAS DEVELOPED A TIME-SHARING
SYSTEM ON THE Q-32 COMPUTER. TIME-SHARING, IN
THIS CASE, IMPLIES SIMULTANEOUS ACCESS TO THE
COMPUTER BY A LARGE NUMBER OF INDEPENDENT USERS.
THE GOAL OF THE SYSTEM IS TO PROVIDE ESSENTIALLY
IMMEDIATE RESPONSE TO QUERIES FROM ALL USERS.
USERS HAVE AT THEIR DISPOSAL KEYBOARDS (PRIMARILY
TELETYPE), DISPLAYS, AND OTHER COMPUTERS. THESE
DEVICES CAN BE OPERATED FROM LOCAL (WITHIN SDC
SANTA MONICA) OR REMOTE STATIONS. THE SYSTEM
HAS BEEN OPERATIONAL SINCE JUNE, 1963. IT
PERMITS PROGRAM PRODUCTION AND DEBUGGING,
EXPERIMENTATION WITH HUMAN SUBJECTS, RAPID ON-LINE
PROGRAMMING AND COMPUTATION, AND OTHER FUNCTIONS
WHICH CAN BENEFIT FROM COMPUTER-HUMAN INTERACTION.
THIS PAPER DISCUSSES THE SYSTEM AS IT APPEARS TO
THE USER, THE GENERAL DESIGN OF THE SYSTEM, AND
RELATES SOME OF THE EXPERIENCE HAD IN USING THE
SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-462 158

MASSACHUSETTS INST OF TECH CAMBRIDGE COMPUTATION
CENTER

TIME-SHARING ON A MULTICONSOLE COMPUTER,

MAR 65 23P SAMUEL, ARTHUR L. I

REPT. NO. MAC-TR-17

CONTRACT: NONR410201

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, TIME), (+TIME,
SCHEDULING), REVIEWS, SCHEDULING, COSTS, CONTROL
SYSTEMS, PROGRAMMING (COMPUTERS), PROGRAMMING
LANGUAGES

IDENTIFIERS: MAC PROJECT, TIME-SHARING

(U)

(U)

AFTER A BRIEF HISTORICAL REVIEW AND A DESCRIPTION
OF THE THREE BASIC TYPES OF TIME-SHARING SYSTEMS, THE
GENERAL PURPOSE TIME-SHARING SYSTEM AS EXEMPLIFIED BY
THE M.I.T. CTSS SYSTEM IS DESCRIBED IN
GENERAL TERMS, WITH PARTICULAR ATTENTION TO THE WAY
THE SYSTEM LOOKS TO THE USER. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-470 715

MASSACHUSETTS INST OF TECH CAMBRIDGE

AN ANALYSIS OF TIME-SHARED COMPUTER SYSTEMS. (U)

DESCRIPTIVE NOTE: DOCTORAL THESIS, 29 DEC 64-4 FEB 65.

JUN 65 178P SCHERR, ALLAN L.:

REPT. NO. MAC-TR-10 (THESIS)

CONTRACT: NONR410201

PROJ: NR048 109

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTERS, SCHEDULING),
OPERATION, SIMULATION, MATHEMATICAL MODELS,
STATISTICAL PROCESSES, MATHEMATICAL PREDICTION,
PROGRAMMING (COMPUTERS), REAL TIME
IDENTIFIERS: MAC PROJECT, THESIS (U)
(U)

SOME OF THE ASPECTS OF THE OPERATION OF TIME-SHARED, INTERACTIVE COMPUTER SYSTEMS ARE ANALYZED. THE EMPHASIS IS ON THE REACTION OF HARDWARE SYSTEMS TO THE DEMANDS THAT ITS USERS MAKE UPON IT. SIMPLY STATED, THE PROBLEM IS TO CHARACTERIZE BOTH TIME-SHARED SYSTEMS AND THEIR USERS IN ORDER TO BE ABLE TO PREDICT THE PERFORMANCE OF THE TWO OPERATING TOGETHER. PORTIONS OF THIS PROBLEM INCLUDE THE SPECIFICATION AND MEASUREMENT OF USER CHARACTERISTICS, THE DEVELOPMENT AND VERIFICATION OF BOTH SIMULATION AND MATHEMATICAL MODELS FOR TIME-SHARED SYSTEMS, AND THE SPECIFICATION AND MEASUREMENT OF PERFORMANCE MATRICS FOR SUCH SYSTEMS. THE USER AND SOME OF THE PERFORMANCE MEASUREMENTS WERE MADE ON PROJECT MAC'S COMPATIBLE TIME-SHARING SYSTEM (CTSS). (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-474 019

MASSACHUSETTS INST OF TECH CAMBRIDGE
CALCULAID: AN ON-LINE SYSTEM FOR ALGEBRAIC
COMPUTATION AND ANALYSIS.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,

SEP 65 53P WANTHAN, MAYER ELIMU I

REPT. NO. MAC-TR-20

CONTRACT: NONR410201

PROJ: NR048 189

UNCLASSIFIED REPORT

DESCRIPTORS: (*PROGRAMMING (COMPUTERS),
DIGITAL COMPUTERS), REAL TIME, SCHEDULING,
ALGEBRA, PROGRAMMING LANGUAGES, COMPUTER
LOGIC

(U)

IDENTIFIERS: CALCULAID, TIME-SHARING SYSTEMS,
MAC PROJECT, OPS, ON-LINE COMPUTER SYSTEMS

(U)

OPS IS AN ON-LINE SYSTEM DEVELOPED AT PROJECT
MAC. THE PRESENT WORK PROVIDES A POWERFUL AND
SIMPLE WAY TO PERFORM NUMERICAL MANIPULATIONS AND
CALCULATIONS WITHIN OPS. THE PROGRAM PACKAGE IS
CALLED CALCULAID, AND PROVIDES A METHOD OF
EXECUTING ALGEBRAIC ASSIGNMENT STATEMENTS, OF WHICH
MAD AND FORTRAN ASSIGNMENTS ARE A SUBSET. WHEN
THIS ASSIGNMENT-STATEMENT ABILITY IS COUPLED WITH
OTHER FEATURES OF THE OPS SYSTEM, MOST OF THE
ABILITY OF A COMPILER LANGUAGE IS PROVIDED.
BECAUSE THE PROGRAMS WRITTEN IN OPS ARE EXECUTED
INTERPRETIVELY, OPS-3 PROGRAMS CAN BE CHANGED AND
RE-RUN IMMEDIATELY, WITHOUT BEING RECOMPILED. THE
APPLICATIONS OF CALCULAID TO THE ANALYSIS OF A
ROUND-ROBIN SCHEDULING MODEL AND TO A PROCESS-CONTROL
PROBLEM ARE DISCUSSED, AND CONCLUSIONS ARE DRAWN
REGARDING THE SUITABILITY OF RUNNING COMPUTATIONAL
PROGRAMS IN AN INTERPRETIVE MODE. (AUTHOR)

(U)

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A00396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-474 443 12/1 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF
METALLURGY
MAP, A SYSTEM FOR ON-LINE MATHEMATICAL ANALYSIS.
DESCRIPTION OF THE LANGUAGE AND INSTRUCTION MANUAL, (U)
JAN 66 104P KAPLOW, ROY STRONG, STEPHEN
IBRACKETT, JOHN I
REPT. NO. MAC-TR-24
CONTRACT: NONR-4102(01)
PROJ: NR-048-189

UNCLASSIFIED REPORT

DESCRIPTORS: (COMPUTERS, MATHEMATICAL
ANALYSIS), MAN-MACHINE SYSTEMS, NUMERICAL
ANALYSIS, INSTRUCTION MANUALS (U)
IDENTIFIERS: MAC PROJECT, ON-LINE MATHEMATICAL
ANALYSIS (MAP) (U)

A SYSTEM FOR ON-LINE MATHEMATICAL ANALYSIS, CALLED
MAP, HAS BEEN DEVELOPED FOR USE WITHIN THE M.I.T.
COMPATIBLE TIME SHARING SYSTEM, TAKING
ADVANTAGE OF THE VARIED USER-MACHINE INTERACTIONS
WHICH ARE POSSIBLE, MAP PROVIDES A FACILITY FOR
HANDLING COMPLEX ANALYSES, DATA INPUT AND
PRESENTATION OF RESULTS WITHOUT REQUIRING ANY
COMPUTER PROGRAMMING BY THE USER. THIS REPORT IS A
DESCRIPTION OF THE LANGUAGE AND A SELF-TEACHING USER
MANUAL. IT DOES NOT DESCRIBE THE TECHNIQUES USED TO
IMPLEMENT THE SYSTEM. WHEN GIVEN INCOMPLETE
REQUESTS, THE SYSTEM WILL PROVIDE INSTRUCTIONS
REGARDING THE USE OF ITS PROCEDURES AND WILL ASK FOR
ALL THE PARAMETERS, VALUES AND OPTION DECISIONS WHICH
MAY BE REQUIRED. IF THE REQUESTS ARE CORRECT AND
SUFFICIENTLY DETAILED, THE COMPUTER WILL PROCEED
DIRECTLY TO THE CALCULATIONS AND, ON COMMAND, PRESENT
THE RESULTS IN GRAPHICAL OR TYPEWRITTEN FORM.
PROVISIONS HAVE ALSO BEEN INCLUDED TO ALLOW THE
EXPANSION AND PERSONALIZATION OF THE SYSTEM IN
WHATEVER MANNER IS DESIRED BY INDIVIDUAL USERS.
(AUTHOR)

(U)

UNCLASSIFIED

A00396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-601 649

IIT RESEARCH INST CHICAGO ILL

A STUDY OF DIGITAL COMPUTERS FOR A REAL TIME TRAINING
SIMULATION RESEARCH SYSTEM. (U)

DESCRIPTIVE NOTE: REPT. FOR 1 MAY-30 JUN 63

MAY 64 111P ANDRESEN, KENNETH W. I

EWING, DUNCAN ;

REPT. NO. M6003 2 REV.

CONTRACT: AF33 657 11007 , PROJ.

PROJ: TASK

MONITOR: AMRL

TOR64 22

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, FLIGHT SIMULATORS),
(+FLIGHT SIMULATORS, DIGITAL COMPUTERS), (+REAL TIME,
TRAINING DEVICES), SIMULATION, SPECIAL PURPOSE
COMPUTERS, ANALOG-TO-DIGITAL CONVERTERS, MULTIPLEX,
DIGITAL-TO-ANALOG CONVERTERS, TIME-INTERVAL COUNTERS,
SYSTEMS ENGINEERING, CONTROL SEQUENCES (U)
IDENTIFIERS: UDFT, PB-440 COMPUTER, SDS 930
COMPUTER, F100 AIRCRAFT, EROS SIMULATION (U)

IN THE STUDY PHASE OF THE PROJECT TO PROVIDE A
GENERAL PURPOSE LABORATORY FACILITY FOR USE IN
RESEARCH IN TRAINING SIMULATION TECHNIQUES, DIGITAL
COMPUTER SYSTEMS AND INTERFACE EQUIPMENTS WERE
EVALUATED FOR THE APPLICATION. CRITERIA FOR THE
SYSTEM EVALUATION WERE OBTAINED FROM PREVIOUS
STUDIES, INVOLVING THE F100A AIRCRAFT AND EROS
VEHICLE FLIGHT SIMULATIONS USING THE UDFT COMPUTER
FACILITY. REQUIREMENTS FOR THE COMPUTER HINGE ON A
REAL ON A REAL TIME OPERATING CAPABILITY WHICH
STRESSES HIGH COMPUTATION RATES. SIGNIFICANT
CHARACTERISTICS INCLUDE: (1) AN OPERATING RATE
IN EXCESS OF 75,000 INSTRUCTIONS PER SECOND ON FLIGHT
SIMULATION PROBLEMS. (2) A MEMORY CAPACITY OF
AT LEAST 8,000 WORDS, (3) A COMPUTER WORD
LENGTH OF AT LEAST 24 BITS, AND (4) AT LEAST
THREE INDEX REGISTERS. THE RESULT OF THE STUDY
PHASE IS A RECOMMENDATION OF THE PACKARD BELL 440
AS THE CENTRAL COMPUTER OF THE SIMULATION SYSTEM AND
AS AN ALTERNATIVE, A RECOMMENDATION OF THE FASTER
SDS 9300 COMPUTER IS MADE PROVIDED ITS HIGHER COST
AND LATER DELIVERY TIME ARE ACCEPTABLE. THE
RECOMMENDED INTERFACE EQUIPMENT WILL INCLUDE A
MULTIPLEXED ANALOG-TO-DIGITAL CONVERSION SUBSYSTEM
CAPABLE OF DIGITIZING 32 INPUT CHANNELS TO 12 BITS AT
A RATE IN EXCESS OF 35,000 CONVERSIONS PER SECOND, A
DUAL RESOLUTION DIGITAL-TO-ANALOG CONVERSION SYSTEM (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-603 972

RAND CORP SANTA MONICA CALIF

JOSS: A DESIGNER'S VIEW OF AN EXPERIMENTAL ON-LINE
COMPUTING SYSTEM, (U)

AUG 64 36P

SHAW, J. C. I

REPT. NO. P-2922

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: THIS PAPER WAS PREPARED FOR
PRESENTATION AT THE 1964 FALL JOINT COMPUTER
CONFERENCE, SPONSORED BY THE AMERICAN FEDERATION OF
INFORMATION PROCESSING SOCIETIES, SAN FRANCISCO,
27-29 OCT 64.

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, DATA
PROCESSING SYSTEMS), (*DATA PROCESSING SYSTEMS, INPUT-
OUTPUT DEVICES), TYPEWRITERS, COMMUNICATION SYSTEMS,
COMPUTER STORAGE DEVICES, PROGRAMMING LANGUAGES (U)
IDENTIFIERS: TIME SHARING (COMPUTERS), JOSS (JOHNNIAC
OPEN-SHOP SYSTEM) (U)

JOSS (JOHNNIAC OPEN-SHOP SYSTEM) IS AN
EXPERIMENTAL ON-LINE, TIME-SHARED COMPUTING SERVICE.
IT IS IN DAILY USE BY STAFF MEMBERS OF THE RAND
CORPORATION FOR THE SOLUTION OF SMALL NUMERICAL
PROBLEMS. THE USERS COMPOSE STORED PROGRAMS AND
INTERACT WITH JOSS THROUGH REMOTE TYPEWRITER
CONSOLES BY USING A SINGLE, HIGH-LEVEL LANGUAGE.
THE SYSTEM IS DESCRIBED WITH EMPHASIS ON THOSE
FEATURES WHICH HAVE LED USERS TO ACCEPT IT AS A
CONVENIENT NEW TOOL. JOSS PROVIDES USE OF FAMILIAR
TYPEWRITERS, EXACT INPUT/OUTPUT, DECIMAL ARITHMETIC,
HIGH-LEVEL ALGEBRAIC LANGUAGE WITH ENGLISH
PUNCTUATION RULES, EASY MODIFICATION AND REPAIR OF
PROGRAMS, AND REPORT-QUALITY FORMATTED OUTPUT.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-605 625
MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH
CENTER
A MATHEMATICAL ANALYSIS OF COMPUTER TIMESHARING
SYSTEMS. (U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT. NO. 20
(MASTER'S THESIS).

JUL 64 IP PATEL, NITIN RATILAL I
CONTRACT: NONR4102 D1 GRANT, DA ARO 031 1246158
MONITOR: AROD, 968 37

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON FUNDAMENTAL
INVESTIGATIONS IN METHODS OF OPERATIONS RESEARCH,
REPT. ON PROJ. MAC.

DESCRIPTORS: (+COMPUTERS, SCHEDULING), (+SCHEDULING,
COMPUTERS), REAL TIME, TIME STUDIES, OPERATIONS
RESEARCH, MANAGEMENT ENGINEERING, MATHEMATICAL
ANALYSIS (U)

IDENTIFIERS: ROUND ROBIN SYSTEM, DYNAMIC PRIORITY
MULTIPLELEVEL SYSTEM (U)

TWO IMPORTANT AND POPULAR TIME-SHARING SYSTEMS WERE
ANALYSED FOR THE EXPECTED WAITS OF REQUESTS. THESE
WERE THE ROUND-ROBIN AND THE DYNAMIC-PRIORITY
MULTIPLE-LEVEL SYSTEMS. THE ROUND-ROBIN IS
VERY COMPLEX IN ALL ITS GENERALITY, HOWEVER WITH THE
AID OF A REALISTIC SIMPLIFYING ASSUMPTION THE DESIRED
EXPECTED WAITS WERE CALCULATED. THE ROUND-ROBIN
UNDER WORST CONDITIONS (I.E. 'FULL LOAD') WAS
ANALYSED RIGOROUSLY. THE DYNAMIC-PRIORITY
MULTIPLELEVEL SYSTEM CONSIDERED WAS SLIGHTLY
DIFFERENT FROM THE ONE IMPLEMENTED BY PROF.
CORBATO OF M. I. T. HERE AGAIN RESULTS WERE
COMPLEX IN GENERAL, BUT WERE DERIVED GENERALLY
NEVERTHELESS. SPECIALIZATION OF THESE RESULTS
SHOULD SIMPLIFY THEM SOMEWHAT. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-606 175

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
PRELIMINARY ANALYSES OF TIME-SHARED COMPUTER
OPERATION.

DESCRIPTIVE NOTE: SCIENTIFIC REPT.,

(U)

AUG 64 34P

COFFMAN, R. G., JR. I

KRISHNAMOORTHY, B. I

REPT. NO. SP-1719

CONTRACT: SD-97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMPUTERS, SCHEDULING), (PROGRAMMING
(COMPUTERS), OPERATIONS RESEARCH), OPERATION,
ANALYSIS, MATHEMATICAL MODELS

IDENTIFIERS: TIME SHARING (COMPUTERS)

(U)

(U)

SEVERAL MODELS OF TIME-SHARED COMPUTER OPERATION
WERE STUDIED. ALONG WITH THIS ONGOING WORK,
STATISTICS WERE ALSO COMPILED ON THE OPERATION OF THE
TIME-SHARING SYSTEM ITSELF. IT IS THE
PURPOSE OF THE PAPER TO PRESENT PRELIMINARY RESULTS
OF THESE EFFORTS AND TO DISCUSS PROBLEMS OF DESIGNING
SCHEDULING ALGORITHMS FOR TIME-SHARED COMPUTER
SYSTEMS. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-607 679

MASSACHUSETTS INST OF TECH CAMBRIDGE INSTRUMENTATION
LAB

DESIGN OF A SPECIAL PURPOSE DIGITAL SYSTEM.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS.

JAN 58 100P

GREEN, ALAN IRWIN I

REPT. NO. T-156

CONTRACT: AFD4 645 9

PROJ: 52 126

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, DIFFERENTIAL
EQUATIONS), (+DIFFERENTIAL EQUATIONS, DIGITAL
COMPUTERS), SIMULTANEOUS EQUATIONS, LINEAR SYSTEMS,
INTEGRATION, TAYLOR'S SERIES, NUMERICAL ANALYSIS,
EQUATIONS, FUNCTIONS, PROGRAMMING (COMPUTERS), REAL
TIME, DIGITAL SYSTEMS, ERRORS, DESIGN

(U)

DESIGN SPECIFICATIONS ARE DEVELOPED FOR A SPECIAL
PURPOSE DIGITAL SYSTEM REQUIRED TO PERFORM A REAL
TIME SOLUTION OF THREE SIMULTANEOUS FIRST ORDER
LINEAR DIFFERENTIAL EQUATIONS WITH TIME VARYING
COEFFICIENTS. THE NUMERICAL INTEGRATION PROCEDURE
FOLLOWED IS BASED ON TAYLOR SERIES EXPANSIONS OF
THE VARIABLES TO BE INTEGRATED. A PROGRAM OF
TYPICAL COMPUTER INSTRUCTIONS IS PROPOSED FOR THE
SOLUTION. AN ERROR ANALYSIS IS PERFORMED TO
DETERMINE THE PARAMETERS NECESSARY TO CHARACTERIZE
COMPLETELY THE NUMERICAL SOLUTION AND THE COMPUTER.
IT IS FOUND THAT A REAL TIME SOLUTION CAN BE
ACHIEVED IF A SUFFICIENT NUMBER OF TERMS IS KEPT IN
THE TAYLOR SERIES EXPANSIONS. THIS IS FEASIBLE
IF THE INPUT DATA ARE SUFFICIENTLY ACCURATE.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-600 342

PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF
ELECTRICAL ENGINEERING
THE USE OF REAL-TIME COMPUTERS FOR INVENTORY
CONTROL.

(U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT.,
NOV 64 70P SHARP, DONALD D., JR.
REPT. NO. MSEE-64-21
CONTRACT: NONR681 40

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+INVENTORY CONTROL, DIGITAL COMPUTERS),
(+DATA PROCESSING SYSTEMS, REAL TIME), (+DIGITAL
COMPUTERS, INVENTORY CONTROL), AUTOMATA, MANAGEMENT
ENGINEERING, INFORMATION RETRIEVAL, SYSTEMS
ENGINEERING, LOGISTICS, INDUSTRIES, FEASIBILITY
STUDIES

(U)

A REAL-TIME SYSTEM PROVIDES IMMEDIATE ACCESS TO
INFORMATION STORED IN THE COMPUTER BY OPERATING
PERSONNEL THROUGHOUT THE ORGANIZATION. THE PURPOSE
OF THIS THESIS IS TO ANALYZE EXISTING AND PROPOSED
REAL-TIME INVENTORY CONTROL SYSTEMS IN ORDER TO
DETERMINE THE ADVANTAGES AND DISADVANTAGES OF THIS
NEW MANAGEMENT TECHNIQUE. ALTHOUGH REAL-TIME
INVENTORY CONTROL SYSTEMS ARE STILL IN THE
DEVELOPMENTAL STAGE, AN EXAMINATION OF THE
IMPLICATIONS OF THESE REAL-TIME SYSTEMS SHOULD
PROVIDE AN INSIGHT INTO THE POSSIBILITIES FOR WIDE
SPREAD USE OF REAL-TIME SYSTEMS FOR INVENTORY CONTROL
AND FOR OTHER BUSINESS APPLICATIONS.

(U)

UNCLASSIFIED

A00396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 500
MASSACHUSETTS INST OF TECH CAMBRIDGE
PROGRAM STRUCTURE IN A MULTI-ACCESS COMPUTER, (U)
64 16P DENNIS, J. B. I
REPT. NO. MAC-TR-11
CONTRACT: NONR4102 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT MAC.

DESCRIPTORS: (=PROGRAMMING (COMPUTERS), MULTIPLE
OPERATION), DATA PROCESSING SYSTEMS, COMPUTER STORAGE
DEVICES, DYNAMICS, SCHEDULING, COMPILERS, DIGITAL
COMPUTERS (U)
IDENTIFIERS: MAC PROJECT, MULTI-ACCESS COMPUTERS (U)

A MULTI-ACCESS COMPUTER (MAC) SYSTEM CONSISTS OF
PROCESSING UNITS AND DIRECTLY ADDRESSABLE MAIN MEMORY
IN WHICH PROCEDURE INFORMATION IS INTERPRETED AS
SEQUENCES OF OPERATIONS ON DATA, A SYSTEM OF TERMINAL
DEVICES THROUGH WHICH USERS MAY COMMUNICATE WITH
PROCEDURES OPERATING FOR THEM, AND MASS MEMORY WHERE
PROCEDURES AND DATA MAY BE HELD WHEN NOT REQUIRED FOR
IMMEDIATE REFERENCE. ONE FUNDAMENTAL ATTRACTION OF
THE MAC CONCEPT IS THE INCREASED PRODUCTIVITY OF
'COMPUTER CATALYZED RESEARCH' THAT RESULTS FROM CLOSE
MAN-MACHINE INTERACTION. ANOTHER ATTRACTION IS
WEALTH OF DATA AND PROCEDURES THAT ARE ACCESSIBLE TO
A LARGE USER COMMUNITY THROUGH THE FILE MEMORY OF A
MAC SYSTEM. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 501

MASSACHUSETTS INST OF TECH CAMBRIDGE
SYSTEM REQUIREMENTS FOR MULTIPLE ACCESS, TIME-SHARED
COMPUTERS, (U)

64 14P CORBATO, F. J. I

REPT. NO. MAC-TR-3

CONTRACT: NONR4102 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT MAC.

DESCRIPTORS: (PROGRAMMING (COMPUTERS), MULTIPLE
OPERATION), (COMPUTERS, SYSTEMS ENGINEERING),
COMPUTER STORAGE DEVICES, DESIGN (U)

IDENTIFIERS: TIME SHARING (COMPUTERS), MAC
PROJECT (U)

RELOCATION EXAMPLES AND SOLUTIONS WERE ELABORATED
IN CONSIDERABLE DETAIL TO EXPOSE THE READER TO THE
DIFFICULTIES ENCOUNTERED WITH CONTEMPORARY MACHINES
WHEN MULTIPLE USER MULTIPLE-PROCESSOR SYSTEMS ARE
CONSIDERED. THE FACT THAT EACH PROGRAM MAY PERFORM
UNEXPECTEDLY, EVEN TO THE USER, DEMANDS THAT RUNNING
PROGRAMS BE ABLE TO BE MOVED AS WELL AS TO GROW AND
TO SHRINK. AS MAN-MACHINE INTERACTION BECOMES
FASTER, EACH PROGRAM TASK BECOMES MORE INTIMATELY
CONNECTED WITH SECONDARY STORAGE AND WITH COMMON
SUBPROGRAMS; THUS EFFECTIVE MULTIPROGRAMMING IS
ESSENTIAL FOR EFFICIENT USE OF A MULTIPLE ACCESS
COMPUTER SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 572

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING AND USER-ORIENTED COMPUTER SYSTEMS: SOME
IMPLICATIONS FOR PUBLIC ADMINISTRATORS. (U)

DESCRIPTIVE NOTE: SCIENTIFIC REPT.,

SEP 64 10P ISAACS, HERBERT H. I
REPT. NO. SP-1772

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED DURING A PANEL DISCUSSION AT
THE 1964 NATIONAL CONFERENCE OF THE AMERICAN SOCIETY
FOR PUBLIC ADMINISTRATION ON 17 APR 64.

DESCRIPTORS: (+INFORMATION RETRIEVAL, MANAGEMENT
ENGINEERING), (+MANAGEMENT ENGINEERING, INFORMATION
RETRIEVAL), DIGITAL COMPUTERS, DATA PROCESSING
SYSTEMS, PROGRAMMING (COMPUTERS), OPERATIONS RESEARCH,
GOVERNMENT EMPLOYEES, POLICE (U)

THE MATERIAL CONTAINED IN THIS PAPER WAS PRESENTED
DURING A PANEL DISCUSSION AT THE 1964 NATIONAL
CONFERENCE OF THE AMERICAN SOCIETY FOR PUBLIC
ADMINISTRATION ON APRIL 17, 1964. THIS WRITTEN
VERSION IS TO BE PUBLISHED IN THE PROCEEDINGS OF THAT
CONFERENCE. IT CONTAINS A BRIEF SUMMARY OF SOME
NEW ADVANCEMENTS IN COMPUTER SYSTEM TECHNOLOGY AND
THEIR IMPLICATIONS FOR PUBLIC ADMINISTRATION. THE
NEW TECHNIQUES ARE DESCRIBED IN TERMS OF HOW THEY
RELATE TO THREE BASIC CATEGORIES OF INFORMATION
PROCESSING TASKS. AN EXAMPLE OF ONE ADVANCED
APPLICATION IN THE LOS ANGELES POLICE
DEPARTMENT IS THEN GIVEN. THE PAPER CONCLUDES
WITH A DISCUSSION OF SOME BROAD IMPLICATIONS FOR THE
PUBLIC ADMINISTRATOR. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 288

MASSACHUSETTS INST OF TECH CAMBRIDGE
A NEW METHODOLOGY FOR COMPUTER SIMULATION,
64 JOP GREENBERGER, MARTIN I

(U)

REPT. NO. MAC-TR-13
CONTRACT: NONR410201
PROJ: NR048 189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC PRESENTED AT THE CONFERENCE ON COMPUTER METHODS IN THE ANALYSIS OF LARGE-SCALE SOCIAL SYSTEMS, SPONSORED BY THE JOINT CENTER FOR URBAN STUDIES OF THE MASSACHUSETTS INST. OF TECH. AND HARVARD UNIV. CAMBRIDGE, MASS., 19-21 OCT 64. SEE ALSO AD-604 681.

DESCRIPTORS: (+COMPUTERS, SIMULATION), SPECIAL PURPOSE COMPUTERS, OPERATIONS RESEARCH, DATA PROCESSING SYSTEMS, SCIENTIFIC RESEARCH

(U)

IDENTIFIERS: MAC PROJECT, OPS-2, TIME-SHARING PROGRAMMING SYSTEMS, ON-LINE SYSTEMS

(U)

COMPUTER SIMULATION IS A COOPERATIVE VENTURE BETWEEN RESEARCHER AND INFORMATION PROCESSOR, BUT THE PROCESSOR'S ROLE CUSTOMARILY BEGINS TOO LATE. THE RESEARCHER CAN BENEFIT SUBSTANTIALLY BY BRINGING THE COMPUTER UP INTO THE EARLIER, CREATIVE PHASES OF THE SIMULATION PROCESS. AN ON-LINE COMPUTER SYSTEM THAT MAKES THIS POSSIBLE IS DESCRIBED. THE OPS SYSTEM IS OPEN-ENDED AND MODULAR IN A VERY FUNDAMENTAL SENSE. THE USER CAN ADD HIS OWN PARTS OVER A PERIOD OF DAYS OR MONTHS AS HE INCREASES HIS UNDERSTANDING OF HIS PROBLEM. THE OPS SYSTEM IS RELATIVELY FREE OF RULES AND FORMATS. THE USER CREATES HIS OWN LANGUAGE AND HIS OWN CONVENTIONS. HE HAS THE WIDEST LATITUDE TO EXPRESS HIS PROBLEM IN ITS NATURAL TERMS AND TO BE INVENTIVE. GRADUALLY HIS SYSTEM TAKES ON AN INDIVIDUAL CHARACTER APPROPRIATE TO THE PURPOSE IT IS TO SERVE. THE USER CAN CREATE HIS OWN SYMBOLS AND HIS OWN MAPPING OF COMMON STORAGE BY MEANS OF STANDARD OPERATORS. HE CAN ALSO CREATE HIS OWN OPERATORS AND ADD THEM WITHOUT LIMIT TO THE SET OF STANDARD OPERATORS SUPPLIED TO HIM. OPERATORS ARE FUNCTIONAL SUBROUTINES PROGRAMMED IN ANY LANGUAGE THAT THE COMPUTER CAN COMPILE, SUCH AS FORTRAN, MAD, OR FAP. OPS-2 PROVIDES THE USER WITH A SIMPLE MECHANISM FOR COMPOUNDING OPERATORS OR CREATING K-OPS. A K-OP TABLE IN COMMON STORAGE HAS ONE LINE FOR EACH OPERATOR IN THE CONCATENATION OF

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 296

MASSACHUSETTS INST OF TECH CAMBRIDGE
THE MAC SYSTEM: A PROGRESS REPORT,

OCT 64 25 FANO, R. M. 1

REPT. NO. MAC-TR-12

CONTRACT: NONR410201

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC. PAPER
PRESENTED AT THE SYMPOSIUM ON COMPUTER AUGMENTATION OF
HUMAN REASONING, WASHINGTON, D. C., 16 JUN 64, AND
PREPARED FOR PUBLICATION IN IEEE SPECTRUM, JAN. 1965.
SEE ALSO AD-608 502.

DESCRIPTORS: (+COMPUTERS, MULTIPLE OPERATION),
(+SPECIAL PURPOSE COMPUTERS, MULTIPLE OPERATION),
(+INFORMATION RETRIEVAL, MULTIPLE OPERATION), REAL
TIME, PROGRAMMING (COMPUTERS), PROGRAMMING LANGUAGES,
DATA PROCESSING SYSTEMS, DATA TRANSMISSION SYSTEMS,
SYSTEMS ENGINEERING

(U)

IDENTIFIERS: MAC PROJECT, IBM-7094, MAN-MACHINE
SYSTEMS, TIME-SHARING PROGRAMMING SYSTEMS, POP-1
COMPUTER

(U)

THE NOTION OF MACHINE-AIDED COGNITION IMPLIES AN
INTIMATE COLLABORATION BETWEEN A HUMAN USER AND A
COMPUTER IN A REAL-TIME DIALOGUE ON THE SOLUTION OF A
PROBLEM, IN WHICH THE TWO PARTIES CONTRIBUTE THEIR
BEST CAPABILITIES. IN ORDER FOR THIS INTIMATE
COLLABORATION TO BE POSSIBLE, A COMPUTER SYSTEM IS
NEEDED THAT CAN SERVE SIMULTANEOUSLY A LARGE NUMBER
OF PEOPLE, AND THAT IS EASILY ACCESSIBLE TO THEM,
BOTH PHYSICALLY AND INTELLECTUALLY. THE PRESENT
MAC SYSTEM IS A FIRST STEP TOWARD THIS GOAL.
THE PURPOSE OF THIS PAPER IS TO PRESENT A BRIEF
DESCRIPTION OF THE CURRENT SYSTEM, TO REPORT ON THE
EXPERIENCE GAINED FROM ITS OPERATION, AND TO INDICATE
DIRECTIONS ALONG WHICH FUTURE DEVELOPMENTS ARE
LIKELY TO PROCEED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 500

MITRE CORP BEDFORD MASS

THE ROLE OF SIMULATION AND DATA REDUCTION PROGRAMS IN
THE DEVELOPMENT OF REAL-TIME SYSTEMS. (U)

DEC 64 31P LAFFERTY, EDWARD L. I

REPT. NO. MITRE SR-126

CONTRACT: AF19 620 2390

PROJ: 414.1

MONITOR: ESD , TOR64 169

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, AIR
DEFENSE COMMAND), (+MODELS (SIMULATIONS), COMMAND AND
CONTROL SYSTEMS), (+DATA PROCESSING SYSTEMS, COMMAND
AND CONTROL SYSTEMS), (+PROGRAMMING (COMPUTERS),
COMMAND AND CONTROL SYSTEMS), DIGITAL COMPUTERS, REAL
TIME, MONTE CARLO METHOD, SYSTEMS ENGINEERING, GROUND
SUPPORT EQUIPMENT, COMMUNICATION SYSTEMS, AIR FORCE,
SIMULATION (U)

IDENTIFIERS: AIR FORCE SYSTEM 414, SAGE (U)

THIS REPORT DEALS WITH THE VALUABLE USE OF
SIMULATION AND DATA REDUCTION COMPUTER PROGRAMS IN
THE ACQUISITION AND ENGINEERING OF COMMAND AND
CONTROL SYSTEMS. THE VALUE OF SIMULATIONS,
ESPECIALLY IN FACILITATING THE LEARNING PROCESS AND
IN EXPEDITING SYSTEM DESIGN, IS DESCRIBED. DATA
REDUCTION IS SHOWN TO BE AN EVOLUTIONARY PROCESS AND
THE DESIGN OF A DATA REDUCTION SYSTEM SHOULD BE
CONSIDERED IN THE VERY EARLY STAGES OF SYSTEM
ACQUISITION. SOME MODEL SIMULATION AND DATA
REDUCTION SYSTEM SOFTWARE ARE EXAMINED AND SEVERAL
CONSIDERATIONS IN THEIR DESIGN ARE ENUMERATED. THE
IMPORTANCE OF THE SYSTEM ENGINEER'S RECOGNITION OF
THE CONSTANTLY CHANGING NATURE OF ALL HIS
INSTRUMENTATION IS STRESSED AS BEING ALL-IMPORTANT IN
THE DESIGN OF SUPPORT SYSTEMS WHICH PROVIDE AN
OVERALL EFFECTIVENESS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 720

TRW SPACE TECHNOLOGY LABS REDONDO BEACH CALIF
THE TRW TWO-STATION, ON-LINE SCIENTIFIC
COMPUTER.

(U)

DESCRIPTIVE NOTE: ANNUAL PROGRESS REPT. (FINAL) FOR 14
JUL 63-14 JUL 64,

DEC 64 324P CULLER, G. J. FRIED, B. D. I
FIELD, E. C. IPOPE, D. I
REPT. NO. STL-8587-6002-RU-000
CONTRACT: AF3D 602 3097
PROJ: 4594
MONITOR: RADC , TOR64 393

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMPUTERS, DATA PROCESSING SYSTEMS),
(DATA PROCESSING SYSTEMS, COMMAND AND CONTROL
SYSTEMS), (COMMAND AND CONTROL SYSTEMS, DATA
PROCESSING SYSTEMS), SCIENTIFIC RESEARCH, PLASMA
OSCILLATIONS, EQUATIONS, MATHEMATICAL ANALYSIS,
PROGRAMMING (COMPUTERS), CONTROL SEQUENCES, REAL TIME,
INSTRUCTION MANUALS, SYSTEMS ENGINEERING (U)

THIS REPORT DESCRIBES THE RESEARCH AND DEVELOPMENT
OF ON-LINE TECHNIQUES AND THEIR APPLICATION TO
PROBLEM SOLVING. FOR CONVENIENCE, IT IS ORGANIZED
IN SEVERAL PARTS. PART 1 LISTS THE PUBLISHED
PAPERS DESCRIBING RESEARCH PROBLEMS SOLVED IN THE
COURSE OF THIS EFFORT AND SUMMARIZES THE
COMPUTATIONAL ASPECTS OF THE MULTI-DIMENSIONAL
PROBLEM (A NONLINEAR DIFFUSION EQUATION) WHICH
RECEIVED THE MOST ATTENTION; THE PHYSICAL
SIGNIFICANCE OF THIS PROBLEM AND A DISCUSSION OF THE
RESULTS OBTAINED IS GIVEN IN PART 5. PART 2
CONTAINS A GENERAL DESCRIPTION OF THE ON-LINE SYSTEM
FROM THE USER'S VIEWPOINT, INCLUDING SOME ELEMENTARY
EXAMPLES OF THE 'CONSTRUCTIVE' ASPECTS OF ON-LINE
COMPUTING. IN PART 3 WE HAVE COLLECTED THE ON-LINE
PROBLEM SOLVING TECHNIQUES DEVELOPED IN THIS PROGRAM
WHICH ARE OF GENERAL INTEREST. THESE INVOLVE A
BLENDING OF NUMERICAL AND MATHEMATICAL ANALYSIS
SOMEWHAT DIFFERENT FROM THAT GENERALLY ENCOUNTERED IN
CONVENTIONAL COMPUTING, BEING BEST CHARACTERIZED AS
EMPHASIZING A GLOBAL RATHER THAN A LOCAL APPROACH TO
PROBLEM FORMULATION AND SOLUTION. PART 4
CONSTITUTES A COMPLETE USER'S MANUAL FOR THE PRESENT
SYSTEM. IT GIVES A DETAILED DESCRIPTION OF EACH OF
THE BASIC PROGRAMS. A GENERAL UNDERSTANDING OF THE
ON-LINE SYSTEM CAN BE OBTAINED FROM PART 2; PARTS 3
AND 4 PROVIDE THE DETAILED INFORMATION NEEDED TO (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-610 392

HITRE CORP BEDFORD MASS
SYSTEM DESIGN AND ENGINEERING FOR REALTIME MILITARY
DATA PROCESSING SYSTEMS, (U)

JAN 65 72P ISRAEL, D. R. 1

REPT. NO. SR-124

CONTRACT: AF19 628 2390

PROJ 416L

MONITOR: ESD 1 TDR64 168

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMMAND AND CONTROL SYSTEMS, AIR
FORCE), (DATA PROCESSING SYSTEMS, COMMAND AND CONTROL
SYSTEMS), REAL TIME, FIRE CONTROL SYSTEMS, MILITARY
REQUIREMENTS, SYSTEMS ENGINEERING, COMMUNICATION
THEORY, COMPUTERS, DISPLAY SYSTEMS, PROGRAMMING
(COMPUTERS), AIR FORCE OPERATIONS (U)
IDENTIFIERS: SAGE, NORAD, AIR FORCE SYSTEM 416 (U)

THIS REPORT TREATS THE KEY PROBLEMS AND
CONSIDERATIONS ARISING IN THE DESIGN, ENGINEERING,
AND IMPLEMENTATION OF MILITARY SYSTEMS IN WHICH REAL-
TIME DATA PROCESSING PLAYS A CENTRAL ROLE. THE
PRINCIPAL DISTINGUISHING CHARACTERISTICS OF THESE
COMMAND AND CONTROL SYSTEMS ARE SUMMARIZED.
ORGANIZATIONAL MATTERS RELATING TO
RESPONSIBILITIES, OPERATIONAL INPUTS, AND PROCUREMENT
ASPECTS ARE DESCRIBED IN THE CONTEXT OF THE OVER-ALL
SYSTEM ACQUISITION PROCESS. INITIAL CONSIDERATIONS
WHICH SHOULD GUIDE THE OVER-ALL DESIGN ARE DISCUSSED,
INCLUDING SUCH OUTSTANDING DESIGN PROBLEMS AS THE
PROPER MATCHING OF MAN/MACHINE CAPABILITIES AND THE
PROVISION OF ADEQUATE CAPACITY AND FLEXIBILITY FOR
CHANGE AND GROWTH. IMPORTANT ASPECTS OF HARDWARE,
SOFTWARE, AND TESTWARE DESIGN ARE ALSO DETAILED.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-611 866

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARED COMPUTER OPERATIONS WITH BOTH
INTERARRIVAL AND SERVICE TIMES EXPONENTIAL. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
OCT 64 49P KRISHNAMOORTHY, B. INWOOD, ROGER
C. I
REPT. NO. SP-1848/000/00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMPUTERS, OPERATIONS RESEARCH),
(SCHEDULING, COMPUTERS), (QUEUEING THEORY,
COMPUTERS), REAL TIME, STATISTICAL FUNCTIONS, SYSTEMS
ENGINEERING, MATHEMATICAL MODELS, MATHEMATICAL
ANALYSIS, PROBABILITY, COMPUTER PERSONNEL,
EFFECTIVENESS (U)
IDENTIFIERS: TIME SHARING (COMPUTERS) (U)

THE CONCEPT OF TIME-SHARED COMPUTER OPERATIONS IS
BRIEFLY DESCRIBED AND A MODEL OF A TIME-SHARING
SYSTEM IS PROPOSED, BASED ON THE ASSUMPTION THAT BOTH
INTERARRIVAL AND SERVICE TIMES POSSESS AN EXPONENTIAL
DISTRIBUTION. ALTHOUGH THE PROCESS DESCRIBED BY
THIS MODEL IS NON-MARKOVIAN, AN IMBEDDED MARKOV
CHAIN IS ANALYZED BY EXPLOITING THE FACT THAT THE
INSTANTS OF COMPLETION OF A 'QUANTUM' OF SERVICE ARE
REGENERATION POINTS. IT IS SHOWN THAT USER
CONGESTION POSSESSES A LIMITING DISTRIBUTION, AND THE
METHOD OF GENERATING FUNCTIONS IS USED TO DERIVE THIS
DISTRIBUTION. THE CONCEPT OF CYCLE TIME IS
DISCUSSED AND TWO MEASURES OF CYCLE TIME DEVELOPED
FOR A SCHEDULING DISCIPLINE EMPLOYING A SINGLE QUEUE.
FINALLY, A NUMBER OF NUMERICAL EXAMPLES ARE
PRESENTED TO ILLUSTRATE THE EFFECT OF THE SYSTEM
PARAMETERS UPON USER CONGESTION, SYSTEM RESPONSE
TIME, AND COMPUTER EFFICIENCY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-611 868
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
SIMULATION OF A TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
DEC 64 24P FINE, GERALD M. I
MCISAAC, PAUL V. I
REPT. NO. SP-1909
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: FOR PRESENTATION AT THE INSTITUTE OF
MANAGEMENT SCIENCES MEETING (TINS), SAN FRANCISCO,
CALIF., 3-5 FEB 65.

DESCRIPTORS: (COMPUTERS, OPERATIONS RESEARCH),
(SCHEDULING, SIMULATION), QUEUEING THEORY, DIGITAL
COMPUTERS, INPUT-OUTPUT DEVICES, REAL TIME,
OPTIMIZATION, MODELS (SIMULATIONS) (U)
IDENTIFIERS: TIME SHARING (COMPUTERS) (O)

THE PAPER DESCRIBES THE USE OF SIMULATION
TECHNIQUES IN THE ANALYSIS OF TIME-SHARE SYSTEM
OPERATION. THE PURPOSE AND GOALS OF THIS RESEARCH
EFFORT ARE BRIEFLY OUTLINED AND SOME COMMENTS ON THE
ADVANTAGES AND DISADVANTAGES OF DIRECT SIMULATION FOR
THIS TYPE OF WORK ARE GIVEN. THE EXISTING
SIMULATOR MODELS ARE DESCRIBED IN TERMS OF INPUTS,
GENERAL FLOW, AND OUTPUTS; AND THE RESULTS OF INITIAL
INVESTIGATIONS WITH THESE MODELS ARE GIVEN. WORK
CURRENTLY IN PROGRESS IS DISCUSSED, AND SOME RELATED
PROBLEMS THAT MAY POSSIBLY BE STUDIED IN THE FUTURE
BY SIMILAR METHODS ARE NOTED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 702

MASSACHUSETTS INST OF TECH CAMBRIDGE

CTSS TECHNICAL NOTES,

(U)

MAR 65

84P

SALTZER, J. M. I

REPT. NO. MAC-TR-16

CONTRACT: NONR410201

PROJ: DSR9457

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (*PROGRAMMING (COMPUTERS), MULTIPLE
OPERATION), (*COMPUTERS, SYSTEMS ENGINEERING), REAL
TIME, COMPUTER STORAGE DEVICES, INPUT-OUTPUT
DEVICES

(U)

IDENTIFIERS: MAC PROJECT, IBM 7094, MULTI-ACCESS
COMPUTERS, ON-LINE SYSTEMS, TIME SHARING (COMPUTERS),
FAP

(U)

THIS REPORT IS A TECHNICAL DESCRIPTION OF THE 7094
COMPATIBLE TIME SHARING SYSTEM IN USE AT
PROJECT MAC AND THE M.I.T. COMPUTATION
CENTER. IT IS DESIGNED TO ACQUAINT A SYSTEM
PROGRAMMER WITH THE TECHNIQUES OF CONSTRUCTION WHICH
WERE USED IN THIS PARTICULAR TIMESHARING SYSTEM.
SEPARATE CHAPTERS DISCUSS THE OVERALL SUPERVISOR
PROGRAM FLOW; CONSOLE MESSAGE INPUT AND OUTPUT; THE
SCHEDULING AND STORAGE ALGORITHMS; AND A THUMBNAIL
SKETCH IS GIVEN OF EACH OF THE SUBROUTINES WHICH MAKE
UP THE SUPERVISOR PROGRAM. THIS REPORT WAS
PREPARED WITH THE AID OF THE COMPATIBLE TIME-SHARING
SYSTEM AND THE TYPSET AND RUNOFF COMMANDS.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 898

TRW COMPUTERS CO CANOGA PARK CALIF
AIR TRAFFIC CONTROL STUDIES. TERMINAL AREA
SEQUENCING AND CONTROL.

DESCRIPTIVE NOTE: REPT. NO. 10 (FINAL) 1 JAN 60-28
FEB 41. (U)

FEB 61 263P JACKSON, A. S. JOTTOSON, M. I. I
PARDEE, R. S. INALL, L. E. HOLLAND, F. C. I
CONTRACT: FAA DRO112
MONITOR: PB, 159 977

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. 05 PROJECT TASC.

DESCRIPTORS: (1) AIR TRAFFIC CONTROL TERMINAL AREAS,
SIMULATION, REAL TIME, FLIGHT SIMULATORS, COMPUTERS,
DISPLAY SYSTEMS, APPROACH, LANDINGS, CONTROL
SEQUENCES, HUMAN ENGINEERING, SYSTEMS ENGINEERING,
ALL-WEATHER AVIATION, AVIATION SAFETY (U)

THE MAJOR AREAS OF COVERAGE ARE: (1) PHILOSOPHY
AND AIMS OF REAL-TIME SIMULATION IN THE TERMINAL
AREA, (2) EQUIPMENT AVAILABLE FOR REAL-TIME
SIMULATION, (3) BRIEF DESCRIPTION OF THE SYSTEMS
THAT HAVE BEEN SIMULATED, AND (4) RESULTS
OBTAINED FROM REAL-TIME SIMULATION AND THEORETICAL
STUDIES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 939

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
A DYNAMIC COMPUTER MODEL FOR SIMULATING MILITARY
COMMAND SYSTEMS. (U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
NOV 64 16P PAGE, LELAND F. I
REPT. NO. SP-1866/000/00
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, ARMED
FORCES OPERATIONS), (+GAME THEORY, ARMED FORCES
OPERATIONS), (+ARMED FORCES OPERATIONS, GAME THEORY),
DYNAMICS, REAL TIME, DIGITAL COMPUTERS, MODELS
(SIMULATIONS), MILITARY TACTICS, WEAPON SYSTEMS,
NETWORKS (U)

THIS PAPER DESCRIBES A COMPUTER-BASED, WAR-GAMING
MODEL THAT OPERATES UNDER A TIME-SHARING SYSTEM ON A
LARGE SCALE DIGITAL COMPUTER. THE MODEL SIMULATES
A COMMAND SYSTEM COMPRISED OF A COMMAND POST AND A
NETWORK OF SUBORDINATE WEAPON CONTROL CENTERS, WEAPON
LAUNCH PLATFORMS, WEAPONS, SENSORS, AND THEIR
INTERCONNECTING COMMUNICATION LINKS. ITS MAJOR
PURPOSE IS TO SERVE AS A GENERAL SIMULATION TOOL THAT
CAN BE READILY ADAPTED TO SIMULATE A VARIETY OF
COMMAND SYSTEMS AND CONFLICT SITUATIONS. AS SUCH,
IT CAN AID IN THE EVALUATION OF PERFORMANCE AND
EFFECTIVENESS OF COMMAND-CONTROL SYSTEMS, OPERATING
AS VULNERABLE NETWORKS IN DYNAMIC CONFLICT WITH A
REACTIVE ENEMY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 940

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING SYSTEMS: REAL AND IDEAL.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

MAR 65 20P

GALLENSON, LOUIS I

WEISSMAN, CLARK I

REPT. NO. SP-1872

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (DATA PROCESSING SYSTEMS, REAL TIME),
(PROGRAMMING (COMPUTERS), SCHEDULING), (SCHEDULING,
PROGRAMMING (COMPUTERS)), COMMAND AND CONTROL SYSTEMS,
SYSTEMS ENGINEERING, DIGITAL COMPUTERS, REMOTE CONTROL
SYSTEMS, COMPUTER STORAGE DEVICES, OPTIMIZATION,

MANAGEMENT ENGINEERING

(U)

IDENTIFIERS: AN/FSQ-32, TIME SHARING,

TELEGRAPH SYSTEMS, ELECTROSTATIC ACCELERATORS

(U)

TO AID IN FUTURE DESIGN FOR LARGE-SCALE, GENERAL-
PURPOSE, COMPUTER TIME-SHARING SYSTEMS, AN APPRAISAL
OF THE EXISTING SDC TIME-SHARING SYSTEM (TSS)
SHOWS THAT IMPROVEMENTS FOR INCREASED USER
SATISFACTION MAY BE MADE IN CONTINUITY OF SYSTEM
OPERATION, RESPONSIVENESS OF THE SYSTEM TO
INTERROGATION, AND ACCESSIBILITY TO USERS.
PROGRAMMING THROUGH MANY DIFFERENT LANGUAGES AND AT
INPUT-OUTPUT CONSOLES LOCATED REMOTE FROM THE
COMPUTER. CONTINUITY OF OPERATION DEPENDS UPON
RELIABLE EQUIPMENT, PARTICULARLY PERIPHERAL INPUT-
OUTPUT DEVICES, AND UPON A RELIABLE TSS EXECUTIVE
PROGRAM, 10% OF WHICH IS DEVOTED TO RESPONDING TO A
WIDE VARIETY OF HARDWARE, PROGRAM, AND USER'S ERRORS.
THOUGH THE MEAN-TIME-TO-FAILURE OF THE SYSTEM IS
IMPORTANT, THE MEAN-TIME-TO-DISCONTINUITY (SHORT
PERIODS OF LESS THAN A MINUTE WHEN THE SYSTEM STOPS
OPERATING) IS ALSO OF SERIOUS IMPORT. ABOUT 7%
OF THE TSS EXECUTIVE AND ABOUT 26% OF THE
EXECUTIVE OPERATE TIME IS DEVOTED TO THE SCHEDULING
OF USER'S PROGRAMS, SO THAT SYSTEM RESPONSIVENESS,
CALLED THE 'RESPONSE CYCLE,' IS WITHIN 2 SECONDS OF A
USER'S QUERY. THE TSS RESPONSE CYCLE IS
DEPENDENT UPON MANY THINGS: PARTICULARLY, HOW MUCH
OPERATE TIME, CALLED A QUANTUM, IS GIVEN TO EACH USER
AND HOW MUCH TIME IS SPENT SWAPPING PROGRAMS BETWEEN
DRUMS AND CORE FOR EACH USER.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-613 271

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

SDC PERSONNEL DATA RETRIEVAL TIMESHARING SYSTEM. (U)

MAR 65 8P

REPT. NO. SP-2008

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PERSONNEL, DATA PROCESSING SYSTEMS),
(DATA PROCESSING SYSTEMS, PERSONNEL), PROGRAMMING
(COMPUTERS), PERSONNEL MANAGEMENT, INFORMATION
RETRIEVAL, TELETYPE SYSTEMS, DATA (U)
IDENTIFIERS: ECCO PROGRAM, AN/FSQ-32, TIME SHARING
(COMPUTERS) (U)

THE PERSONNEL DATA RETRIEVAL TIME-SHARING
SYSTEM, USING THE ECCO PROGRAM, OPERATES UNDER
THE AN/FSQ-32 TIME-SHARING SYSTEM TO PROVIDE
AN ON-LINE INQUIRY CAPABILITY FOR SEARCHING PERSONNEL
DATA FILES AND OUTPUTTING THE REQUIRED INFORMATION.
THE INQUIRY CAPABILITY IS PROVIDED BY AN ON-LINE
MODEL 28 OR MODEL 33 TELETYPE SEND-RECEIVE SET.
THIS EQUIPMENT ALLOWS THE INQUIRER TO INSERT THE
COMMANDS, CONTROL INFORMATION, AND SEARCH PARAMETERS
REQUIRED FOR THE DATA RETRIEVAL. THE SYSTEM
PROVIDES THREE BASIC CAPABILITIES FOR PROCESSING
PERSONNEL INFORMATION ITEMS CONTAINED IN THE DATA
BASE. THESE ARE: (1) A GENERALIZED SEARCH
CAPABILITY WHEREBY INDIVIDUALS WITH VARIOUS
BACKGROUNDS AND CHARACTERISTICS MAY BE IDENTIFIED
FROM THE DATA BASE. (2) A LIST CAPABILITY IS
PROVIDED WHICH ALLOWS THE OPERATOR TO SPECIFY A
PRINT-OUT OF ANY OF THE INFORMATION CONTAINED IN EACH
INDIVIDUAL'S RECORD IN A VARIETY OF FORMATS. (3)
A CAPABILITY IS PROVIDED TO PERFORM TWO STATISTICAL
OPERATIONS ON ANY QUANTIFIED ITEMS OF INFORMATION IN
THE DATA BASE. THE TWO STATISTICAL ROUTINES ARE
THE ARITHMETIC MEAN AND THE RANGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-613 630

RAND CORP SANTA MONICA CALIF

A WORKING DEFINITION OF REAL-TIME CONTROL,

MAR 66 26P

NELSON, EDWARD A. I

(U)

REPT. NO. P-3089

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (MANAGEMENT CONTROL SYSTEMS, REAL TIME), (REAL TIME, MANAGEMENT CONTROL SYSTEMS), MANAGEMENT ENGINEERING, COMPUTERS, CONTROL SEQUENCES, FACTOR ANALYSIS, DECISION MAKING, CONTROL (U)

CONTROL IS THE PROCESS OF ASSURING THE CONFIRMITY OF PLANS AND EVENTS. REAL-TIME CONTROL REQUIRES THAT THE RESPONSE OF EACH ELEMENT OF THE CONTROL SYSTEM IS SUCH THAT THE COMBINED EFFECT OF ALL ELEMENTS PRODUCES RESULTS THAT ARE SUFFICIENTLY EXPEDITIOUS TO PRECLUDE FAILURE OF THE SYSTEM. A REAL-TIME CONTROL SYSTEM IS CONCERNED WITH A FLOW PROCESS THROUGH TIME. IT THUS ARISES OUT OF, AND IS INTIMATELY CONNECTED WITH THE CONCEPTS OF DISTRIBUTION LOGISTICS. THE PROPER FUNCTIONING OF A REALTIME CONTROL SYSTEM REQUIRES THE USE OF EVERY ONE OF ITS ELEMENTS, AND ANY ONE ELEMENT MAY BECOME THE CRITICAL FACTOR. IT IS NOT NECESSARILY THE ELEMENTS THEMSELVES, BUT RATHER THE PRECISE INTERRELATIONSHIP OF THESE ELEMENTS, WITH TIME, THAT MAKES A CONTROL SYSTEM A REAL-TIME CONTROL SYSTEM. PROGRESS IN THE DEVELOPMENT OF REAL-TIME SYSTEMS THEREFORE INVOLVES ATTENTION TO EVERY ELEMENT AND ITS RELATION TO THE OTHERS. THE ELEMENTS OF A REALTIME SYSTEM ARE: FORECASTING, COMMUNICATION, DECISION, CONTROL MECHANISM, AND CRITERIA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-614 040

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE TINT USERS' GUIDE,

(U)

HAR 45 151P KENNEDY, PHYLLIS R. 1
REPT. NO. TM-1933/000/02
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING (COMPUTERS), INSTRUCTION
MANUALS), (*COMPILERS, CONTROL SEQUENCES),
(*PROGRAMMING LANGUAGES, COMPILERS), (*TELETYPE
SYSTEMS, PROGRAMMING (COMPUTERS)), DATA PROCESSING
SYSTEMS, REAL TIME, COMMAND AND CONTROL SYSTEMS,
DIGITAL COMPUTERS

(U)

IDENTIFIERS: TIME SHARING (COMPUTERS), JOVIAL,
TINT

(U)

A USERS' GUIDE THAT INSTRUCTS THE PROSPECTIVE
TIMESHARING USER ON HOW TO USE TINT, THE ON-
LINE TELETYPE JOVIAL INTERPRETER. THIS GUIDE
PRESENT A BRIEF INTRODUCTION TO THE TIME-SHARING
SYSTEM, A COMPLETE DESCRIPTION OF THE TINT
COMMANDS, A COMPLETE DESCRIPTION OF THE DIALECT OF
THE JOVIAL LANGUAGE WHICH TINT INTERPRETS, AND
THE TSS COMMANDS THAT ARE REQUIRED WHEN OPERATING
TINT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-614 992

RAND CORP SANTA MONICA CALIF

JOSS: EXAMPLES OF THE USE OF AN EXPERIMENTAL ON-LINE
COMPUTING SERVICE, (U)

APR 65 11P SHAW, J. C. I

REPT. NO. P-3131

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LIMITED NUMBER OF COPIES CONTAINING
COLOR OTHER THAN BLACK AND WHITE ARE AVAILABLE UNTIL STOCK
IS EXHAUSTED. REPRODUCTIONS WILL BE MADE IN BLACK AND
WHITE ONLY. PRESENTED AT THE SIXTH ANNUAL SYMPOSIUM
OF THE PROFESSIONAL GROUP ON HUMAN FACTORS IN
ELECTRONICS, THE INSTITUTE OF ELECTRICAL AND
ELECTRONIC ENGINEERS, BOSTON, MAY 4-8, 1965.

DESCRIPTORS: (+SPECIAL PURPOSE COMPUTERS, NUMERICAL
METHODS AND PROCEDURES), (+NUMERICAL METHODS AND
PROCEDURES, SPECIAL PURPOSE COMPUTERS), (+DATA
PROCESSING SYSTEMS, SPECIAL PURPOSE COMPUTERS),
NUMBERS, NUMERICAL ANALYSIS, PROGRAMMING LANGUAGES,
INPUT-OUTPUT DEVICES (U)

IDENTIFIERS: JOSS (JOHNNIAC OPEN-SHOP SYSTEM), ON-
LINE SYSTEMS, TIME SHARING (COMPUTERS) (U)

CONTENTS (SINCE JOSS IGNORES INPUT LINES
BEGINNING WITH AN ASTERISK, THE DEVICE IS USED TO
INTERPOSE COMMENTS IN THE EXAMPLES: ON THE ORIGINAL
COPY, OUTPUT IS IN BLACK AND INPUT IN GREEN):
ELEMENTS OF THE LANGUAGE STORED PROGRAM FOR
COMPUTING THE HYBOTENUSE INTEGRATION OF $1/X$ BY
GAUSS 2-POINT RULE ROOT FINDING MATRIX
INVERSION WITH SIMPLE PIVOTING ON THE DIAGONAL AN
ASTERISK AT THE END CAN KILL THE LINE PRODUCTION OF
A FORMATTED TABLE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 604

RAND CORP SANTA MONICA CALIF

JOSS: CONVERSATIONS WITH THE JOHNNIAC OPENSHOP
SYSTEM,

(U)

MAY 65 6P SHAW, J. C. I

REPT. NO. P-3146

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE INTERNATIONAL
FEDERATION FOR INFORMATION PROCESSING CONGRESS,
NEW YORK, N. Y., 24-29 MAY 66. SEE ALSO AD-603
972, AD-614 992.

DESCRIPTORS: (1) SPECIAL PURPOSE COMPUTERS, NUMERICAL
METHODS AND PROCEDURES), (1) NUMERICAL METHODS AND
PROCEDURES, SPECIAL PURPOSE COMPUTERS), (1) DATA
PROCESSING SYSTEMS, SPECIAL PURPOSE COMPUTERS),
NUMERICAL ANALYSIS, PROGRAMMING (COMPUTERS),
PROGRAMMING LANGUAGES

(U)

IDENTIFIERS: ON-LINE SYSTEMS, JOSS (JOHNNIAC OPENSHOP
SYSTEM), TIME SHARING (COMPUTERS)

(U)

THE JOHNNIAC OPEN-SHOP SYSTEM (JOSS) IS AN
EXPERIMENTAL SYSTEM DESIGNED TO DEMONSTRATE BENEFITS
OF ON-LINE INTERACTION WITH A COMPUTER, PARTICULARLY
A COMPUTER LIMITED TO SMALL NUMERICAL COMPUTATIONS
SUCH AS THE JOHNNIAC. EXAMPLES ARE GIVEN OF
CONVERSATION WITH THE COMPUTING SYSTEM WHEREBY
COMPUTING REQUIREMENTS ARE MET THAT ARE NOT WELL
SATISFIED BY CONVENTIONAL SERVICES. THE FIRST
EXAMPLE IS OF THE PRODUCTION OF A TABLE WITH THE
CONVERSATION DIRECTING JOSS TO MODIFY THE PROGRAM
TO SPECIFY PYTHAGOREAN TRIPLES. JOSS STORES
NUMERICAL VALUES, FORMS, AND STEPS THAT BEGIN WITH
NUMERICAL LABELS. THE SECOND EXAMPLE IS OF THE
ASSISTANCE JOSS GIVES BY EXTENSIVE CHECKING OF THE
USER'S INSTRUCTIONS. JOSS COMMENTS FROM A STOCK OF
40 'CANNED' MESSAGES (MOSTLY ERROR MESSAGES),
FREQUENTLY ALLOWING THE USER TO REPAIR AN ERROR ON
THE SPOT AND DIRECT JOSS TO CONTINUE.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-616 450

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
AN EXPERIMENTAL ON-LINE DATA STORAGE AND RETRIEVAL
SYSTEM, (U)

FEB 65 42P NOLAN, J. F. IARMENTI, A. W. ;

REPT. NO. TR-377

CONTRACT: AF19 620 800 ,NONR410201

MONITOR: ESD , TDR-66-36

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING (COMPUTERS), DATA STORAGE
SYSTEMS), (DATA STORAGE SYSTEMS, PROGRAMMING
(COMPUTERS)), INFORMATION RETRIEVAL, COMPUTER LOGIC,
DATA TRANSMISSION SYSTEMS, COMPUTERS, MULTIPLE
OPERATION (U)

IDENTIFIERS: LIST PROCESSING, MAC PROJECT, ON-LINE
SYSTEMS, COMPUTER WORDS, TIME SHARING (COMPUTERS) (U)

THIS REPORT DESCRIBES AN EXPERIMENTAL PROGRAM
SYSTEM DESIGNED TO TEST AND DEMONSTRATE ON-LINE
STORAGE AND RETRIEVAL OF FORMATTED DATA BASED ON
COMPLETE INTERNAL DESCRIPTIONS OF THE FILES. THE
USE OF INTERNAL DESCRIPTIONS ALLOWS EACH USER (WHO
NEED NOT BE A TRAINED PROGRAMMER) TO DEFINE,
MODIFY, AND CROSS-ASSOCIATE DATA FILES TO SUIT HIS
PARTICULAR NEEDS. THE EXPERIMENTAL PROGRAM SYSTEM
WAS IMPLEMENTED BY REMOTE USE OF THE COMPATIBLE
TIMESHARING SYSTEM (CTSS) FACILITIES OF
PROJECT MAC AT THE MASSACHUSETTS INSTITUTE OF
TECHNOLOGY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-616 731

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
FUNDAMENTALS OF INFORMATION PROCESSING AND COMPUTERS
FOR STATE AND LOCAL GOVERNMENT, (U)

MAY 65 34P KIBBEE, JOEL M. I

REPT. NO. SP-2073

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, MANAGEMENT
ENGINEERING), (+COMPUTERS, MANAGEMENT ENGINEERING),
PROGRAMMING (COMPUTERS), REAL TIME, PROGRAMMING
LANGUAGES, INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: TIME SHARING (COMPUTERS), ON-LINE
SYSTEMS, INFORMATION SYSTEMS, LOCAL GOVERNMENTS (U)

THE PAPER INTRODUCES TO THE PUBLIC MANAGER THE
FUNDAMENTALS OF INFORMATION PROCESSING AND COMPUTERS.
TO UNDERSTAND COMPUTERS, IT IS NECESSARY TO
DISTINGUISH BETWEEN 'HARDWARE' AND 'SOFTWARE.'
HARDWARE IS THE PHYSICAL PIECE OF EQUIPMENT.
SOFTWARE IS EVERYTHING ELSE--PROGRAMS AND
PROCEDURES--NEEDED BY PEOPLE TO MAKE COMPUTERS
USEFUL. A COMPUTER SHOULD NOT BE THOUGHT OF AS
SOMETHING WHICH EXISTS INDEPENDENTLY OF SOFTWARE.
THIS PAPER DEALS FIRST WITH THE INFORMATION SYSTEM--
A COLLECTION OF MEN, MACHINES, AND SOFTWARE, WITH
EACH ASSIGNED THAT TASK WHICH EACH DOES BEST--AND
THEN DISCUSSES HARDWARE AND DATA COMMUNICATIONS.
SOFTWARE, MORE IMPORTANT THAN HARDWARE, AND EQUALLY
COSTLY, IS TREATED WITH PRIMARILY EMPHASIS ON
PROGRAMMER AND USER LANGUAGES, TIME-SHARING,
SOFTWARE-SHARING, AND INFORMATION-SHARING ARE
COVERED, AS WELL AS THE CONCEPTS OF A UNIFIED
INFORMATION SYSTEM AND A COORDINATED INFORMATION
SYSTEM. THE PAPER CONCLUDES WITH A SUGGESTION THAT
STATE AND LOCAL GOVERNMENT MIGHT, THROUGH JOINT
DEVELOPMENT, DECREASE THE COST OF SOFTWARE FOR EACH
OF THEM. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 943
RAND CORP SANTA MONICA CALIF
JOSS: EXPERIENCE WITH AN EXPERIMENTAL COMPUTING
SERVICE FOR USERS AT REMOTE TYPEWRITER CONSOLES, (U)
MAY 65 19P SHAW, J. C. I
REPT. NO. P-3149

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+SPECIAL PURPOSE COMPUTERS, DATA
PROCESSING SYSTEMS), (+DATA PROCESSING SYSTEMS,
INPUT-OUTPUT DEVICES), TYPEWRITERS, TRAINING,
PROGRAMMING LANGUAGES, COMMUNICATION SYSTEMS,
COMPUTER STORAGE DEVICES (U)

IDENTIFIERS: JOSS (JOHNNIAC OPEN-SHOP
SYSTEM), MAN-MACHINE SYSTEMS, TIME
SHARING (COMPUTERS) (U)

DESCRIPTIONS ARE GIVEN OF THE PHILOSOPHY OF THE
JOSS SYSTEM, ITS HARDWARE AND SOFTWARE, AND
EXPERIENCE WITH ITS USE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-618 931

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
A USER-ORIENTED PRIORITY SCHEME FOR A TIME-SHARING
SYSTEM, (U)

JUN 65 35P TOTSCHKE, ROBERT A. I

REPT. NO. SP-2111

CONTRACT: SD-97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+PROGRAMMING(COMPUTERS),
SCHEDULING), (+COMPUTERS, SCHEDULING),
AUTOMATIC (U)

IDENTIFIERS: TIME SHARING(COMPUTERS), ON-LINE
SYSTEMS (U)

TIME-SHARING SYSTEMS HAVE YIELDED LARGE PAYOFFS IN
COMPUTER PROGRAM PRODUCTION BY PROVIDING FAST
TURNAROUND AND INTERACTIVE DEBUGGING. CORPORATIONS
OR INSTITUTES THAT INSTALL TIME-SHARING SYSTEMS WILL
FIND THAT THEIR SYSTEMS WILL SOON BE SATURATED WITH
USERS. UNTIL THE SYSTEM CAPACITY IS EXPANDED, BY
MEANS OF HARDWARE OR SOFTWARE CHANGES, IT MAY BE
DESIRABLE TO IMPLEMENT A PRIORITY SYSTEM THAT WILL
FACILITATE WORK ON CRITICAL PROJECTS AND INSURE THE
MEETING OF DEADLINES. THIS PAPER DISCUSSES THE
CRITERIA FOR A TIME-SHARING PRIORITY SCHEME AND
PRESENTS SOME TECHNIQUES FOR SUPERIMPOSING A PRIORITY
SCHEME UPON A TYPICAL TIMESHARING CONFIGURATION.
THE SCHEME HAS THREE PRIMARY PRIORITIES: HIGH,
LOW, AND NO. USERS ARE ALLOCATED BUDGETS OF
HIGH AND LOW PRIORITY TIME FOR THE SUCCEEDING
MONTH BASED UPON THEIR CURRENT FORECAST AND PREVIOUS
USAGE. ALL USERS ARE GIVEN UNLIMITED NO PRIORITY
TIME. THE SALIENT FEATURE OF THE SCHEME IS THAT THE
USERS DETERMINE WHEN AND AT WHICH PRIORITY THEY WILL
OPERATE. SOME EXAMPLES OF THE BUDGET ALLOCATION
PROCESS ARE INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 001
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
INTERARRIVAL STATISTICS FOR TSS. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
AUG 65 14P COFFMAN, E. G., JR. INWOOD, R.
C. I
REPT. NO. SP-2161
CONTRACT: 5097

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING (COMPUTERS),
SCHEDULING), (SCHEDULING, COMPUTERS),
OPTIMIZATION, STATISTICAL FUNCTIONS, STOCHASTIC
PROCESSES, QUEUING THEORY (U)
IDENTIFIERS: TIME SHARING (COMPUTERS) (U)

THE OPTIMIZATION OF TIME-SHARED SYSTEM PERFORMANCE
REQUIRES THE DESCRIPTION OF THE STOCHASTIC PROCESSES
GOVERNING THE USER INPUTS AND THE PROGRAM ACTIVITY.
THIS PAPER PROVIDES A STATISTICAL DESCRIPTION OF
THE USER INPUT PROCESS IN THE SDC-ARPA GENERAL-
PURPOSE TIME-SHARING SYSTEM (TSS). THE INPUT
PROCESS IS ASSUMED TO BE STATIONARY, AND TO BE
DEFINED BY THE INTERARRIVAL TIME DISTRIBUTION. THE
DATA OBTAINED APPEAR TO JUSTIFY SATISFACTORILY THE
COMMON ASSUMPTION THAT THE INTERARRIVAL TIMES ARE
SERIALLY INDEPENDENT. THE DATA DO NOT APPEAR TO
JUSTIFY, EXCEPT AS A VERY ROUGH APPROXIMATION, THE
USUAL ASSUMPTION OF AN EXPONENTIAL DISTRIBUTION FOR
INTERARRIVAL TIME. A MUCH MORE SATISFACTORY
APPROXIMATION TO THE DATA CAN BE OBTAINED WITH A
BIPHASE OR TRIPHASE HYPEREXPONENTIAL DISTRIBUTION.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 003

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
AN EMPIRICAL INVESTIGATION INTO THE BEHAVIOR OF THE
SDC TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
AUG 65 78P TOTSCHKE, ROBERT A. I
REPT. NO. SP-2191/000/00
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMPUTERS, SCHEDULING), COMPUTER
LOGIC, EFFECTIVENESS, MULTIPLE OPERATION, REAL
TIME, INPUT-OUTPUT DEVICES, OPTIMIZATION,
OPERATIONS RESEARCH (U)
IDENTIFIERS: TIME SHARING (COMPUTERS), AN/FSQ-
J2 (U)

THE BEHAVIOR OF A COMPUTER TIME-SHARING SYSTEM IS
INTRINSICALLY COMPLEX BECAUSE SUCH A SYSTEM EFFECTS A
COMPROMISE BETWEEN ALLOWING JOBS TO RUN TO COMPLETION
AND ALLOWING ITS SEVERAL USERS SIMULTANEOUS COMPLETE
AND IMMEDIATE ACCESS TO OPERATE AND DEBUG THEIR
PROGRAMS. IT IS GENERALLY KNOWN THAT COMPUTER
SYSTEMS THAT ALLOW JOBS TO RUN TO COMPLETION TEND TO
MAXIMIZE SYSTEM EFFICIENCY; COMPUTER SYSTEMS THAT
OFFER THE INDIVIDUAL THE MOST IMMEDIATE POSSIBLE
RESPONSE TEND TO MAXIMIZE THEIR UTILITY TO THE USER.
IT IS ALSO KNOWN THAT THE RELATIVELY SLOW SPEEDS OF
THE I/O DEVICES THAT BUFFER INDIVIDUALS FROM
COMPUTERS (AND VICE VERSA) PERMIT THE TIME-
SHARING SYSTEMS TO SERVICE SEVERAL USERS AT A
REASONABLE COST PER USER. THE REPORT ATTEMPTS TO
MAKE MORE PRECISE STATEMENTS ABOUT THE BEHAVIOR OF
THE SDC TIME-SHARING SYSTEM, USING DATA OBTAINED
FROM 13 ONE-HOUR RECORDINGS. THESE DATA INCLUDE
DISTRIBUTIONS OF SERVICE AND INTERARRIVAL TIMES,
NUMBER OF USERS, AND OVERHEAD TIMES. IN ADDITION,
TWO SCHEDULING LOGICS ARE COMPARED. SEVERAL
MEASURES OF EFFECTIVENESS, FROM BOTH A SYSTEM AND AN
INDIVIDUAL VIEWPOINT ARE INTRODUCED AND EVALUATED
USING THESE DATA. SOME ANALYSES HAVE ALSO BEEN
INCLUDED TO PREDICT THE EFFECTS OF SYSTEM CHANGES.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 012

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE STATIONARY BEHAVIOR OF A TIME-SHARING SYSTEM
UNDER POISSON ASSUMPTIONS.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

SEP 65 29P KRISHNAMOORTHY, B. ;
REPT. NO. SP-2090/000/00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE AD-622 014.

DESCRIPTORS: (+COMPUTERS, OPERATIONS RESEARCH),
(+SCHEDULING, COMPUTERS), (+QUEUEING THEORY,
COMPUTERS), STATISTICAL PROCESSES, PROBABILITY,
TIME, MATHEMATICAL ANALYSIS

(U)

IDENTIFIERS: TIME SHARING (COMPUTERS)

(U)

IN A RECENT PAPER (AD-611 846), THE AUTHOR
ANALYZED A MARKOV CHAIN IMBEDDED IN THE STOCHASTIC
PROCESS $X(t)$ ($t \geq 0$) WHERE $X(t)$
DENOTES THE NUMBER OF ACTIVE CHANNELS AT TIME t IN A
TIME-SHARING SYSTEM WITH BOTH INTERARRIVAL AND
SERVICE TIMES EXPONENTIAL AND A FINITE NUMBER OF
USERS. IN THIS PAPER, BY USING RENEWAL THEORETIC
ARRANGEMENTS, THE LIMITING DISTRIBUTION OF $X(t)$
IS OBTAINED AS t GOES TO INFINITY OVER ALL TIME
POINTS. THE EQUILIBRIUM WAITING TIME HAS ALSO BEEN
ANALYZED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 013

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
OBSERVATIONS ON TIME-SHARED SYSTEMS.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

SEP 65 28P SCHWARTZ, JULES I. I

REPT. NO. SP-2046

CONTRACT: 5097

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE NATIONAL ACM
CONFERENCE (20TH), CLEVELAND, OHIO, 24-6 AUG 65.

DESCRIPTORS: (*COMPUTERS, SCHEDULING), (*DATA
PROCESSING SYSTEMS, SCHEDULING), (*SCHEDULING,
COMPUTERS), TIME, OPERATION

(U)

IDENTIFIERS: ON-LINE SYSTEMS, TIME
SHARING (COMPUTERS)

(U)

THE PAPER DISCUSSES VARIOUS CONSIDERATIONS FOUND
NECESSARY WHEN PLANNING AN ON-LINE TIME-SHARED
INSTALLATION, PARTICULARLY FROM THE POINT OF VIEW OF
USERS OF SUCH SYSTEMS. BASED MAINLY ON EXPERIENCE
WITH THE TIME-SHARING SYSTEM AT THE SYSTEM
DEVELOPMENT CORPORATION, ACTUAL SITUATIONS ARE
DESCRIBED IN ORDER TO SHOW WHERE PROBLEMS EXIST, AND
HOW ADVANTAGES OF SUCH SYSTEMS MAY BE ACCRUED.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 016

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARED COMPUTER OPERATIONS WITH BOTH
INTERARRIVAL AND SERVICE TIMES EXPONENTIAL.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
SEP 45 SIP KRISHNAMOORTHY, B. I
WOOD, ROGER C. I

REPT. NO. SP-1848/000/01

CONTRACT: SD97

MONITOR: AD 611 866 SUPERSED ED

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMPUTERS, OPERATIONS RESEARCH),
(SCHEDULING, COMPUTERS), (QUEUEING THEORY,
COMPUTERS), REAL TIME, STATISTICAL FUNCTIONS,
SYSTEMS ENGINEERING, MATHEMATICAL MODELS,
MATHEMATICAL ANALYSIS, PROBABILITY, COMPUTER
PERSONNEL, EFFECTIVENESS

(U)

IDENTIFIERS: TIME SHARING (COMPUTERS)

(U)

THE CONCEPT OF TIME-SHARED COMPUTER OPERATIONS IS
BRIEFLY DESCRIBED AND A MODEL OF A TIME-SHARING
SYSTEM IS PROPOSED, BASED ON THE ASSUMPTION THAT BOTH
INTERARRIVAL AND SERVICE TIMES POSSESS AN EXPONENTIAL
DISTRIBUTION. ALTHOUGH THE PROCESS DESCRIBED BY
THIS MODEL IS NON-MARKOVIAN, AN IMBEDDED MARKOV
CHAIN IS ANALYZED BY EXPLOITING THE FACT THAT THE
INSTANTS OF COMPLETION OF A 'QUANTUM' OF SERVICE ARE
REGENERATION POINTS. IT IS SHOWN THAT USER
CONGESTION POSSESSES A LIMITING DISTRIBUTION, AND THE
METHOD OF GENERATING FUNCTIONS IS USED TO DERIVE THIS
DISTRIBUTION. THE CONCEPT OF CYCLE TIME IS
DISCUSSED AND TWO MEASURES OF CYCLE TIME DEVELOPED
FOR A SCHEDULING DISCIPLINE EMPLOYING A SINGLE QUEUE.
A NUMBER OF NUMERICAL EXAMPLES ARE PRESENTED TO
ILLUSTRATE THE EFFECT OF THE SYSTEM PARAMETERS UPON
USER CONGESTION, SYSTEM RESPONSE TIME, AND COMPUTER
EFFICIENCY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 018
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
LISP 1.5 REFERENCE MANUAL FOR Q-32.
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
AUG 65 B6P KAMENY, S. L. ;
REPT. NO. TM-2337/101/00
CONTRACT: SDY7

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PROGRAMMING LANGUAGES, INSTRUCTION
MANUALS), (*COMPUTERS, SCHEDULING), COMPILERS,
COMPUTER STORAGE DEVICES

(U)

IDENTIFIERS: AN/FSQ-32, LISP, TIME
SHARING (COMPUTERS), PUSHDOWN STORAGE

(U)

THE DOCUMENT IS A REFERENCE MANUAL FOR THE Q-32
LISP SYSTEM IN OPERATION UNDER THE TIME-SHARING
SYSTEM (TSS) ON THE AN/FSQ-32 COMPUTER. IT
DESCRIBES THE WORKING OF THE LISP SYSTEM, AND
CONTAINS DESCRIPTIONS OF ALL CURRENTLY AVAILABLE AND
INSTALLED FUNCTIONS, EXCEPT FOR INPUT-OUTPUT AND
LIBRARY FUNCTIONS GIVEN IN TM-2337/102/00 (AD-622
022). THIS DOCUMENT CONFORMS TO THE CURRENT
NUMBERING ON LISP 1.5 DOCUMENTS, AND SUPERSEDES
TM-2430/000/00, WHICH WAS A DRAFT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 020

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TRACE MODEL 1. TIMESHARED ROUTINES FOR ANALYSIS,
CLASSIFICATION AND EVALUATION.

(U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,

SEP 65 50P MOORE, WILLIAM H. JR. I

HECKER, ROBERT J. ISHURE, GERALD H. I

REPT. NO. TM-2621

CONTRACT: SD286

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING (COMPILERS),
SCHEDULING), (COMPUTERS, SCHEDULING), DATA,
ANALYSIS, CLASSIFICATION, TELETYPE SYSTEMS,
FEEDBACK, OPTIMIZATION

(U)

IDENTIFIERS: AN/FSQ-32, TIME
SHARING (COMPUTERS), ON-LINE SYSTEMS, JOVIAL,
EVALUATION

(U)

THE DOCUMENT PRESENTS A USER'S AND PROGRAMMER'S
DESCRIPTION OF THE TRACE PROGRAM, WHICH PROVIDES
THE USER WITH AN ON-LINE TECHNIQUE FOR SCANNING DATA
AND DERIVING VARIABLES. THE TECHNIQUE ASSISTS IN
CREATING AND EVALUATING OPTIMAL INDICES FOR
EXHIBITING RELATIONS AMONG EMPIRICAL DATA. TRACE
IS WRITTEN IN THE TIMESHARING SYSTEM VERSION OF THE
JOVIAL LANGUAGE (JTS) FOR THE AN/FSQ-32
COMPUTER AT SDC. THE ON-LINE CAPABILITY OF THE
PROGRAM PERMITS IMMEDIATE FEEDBACK TO THE USER ABOUT
THE RELATIVE UTILITY OF DERIVED INDICES AND PERMITS
ADOPTION OR MODIFICATION OF THESE FOR FURTHER
ANALYSES. THE TIME-SHARING CAPABILITY OF THE
PROGRAM PERMITS EFFICIENT USE OF THE COMPUTER IN THIS
PROCESS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 021

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE TINT USERS' GUIDE.

(U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,

JUL 65 182P KENNEDY, PHYLLIS R. :

REPT. NO. TM-1933-000-02

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTERS, INSTRUCTION MANUALS),
(*SCHEDULING, COMPUTERS), TELETYPE SYSTEMS,
COMPILERS, REAL TIME, MULTIPLE OPERATION,
PROGRAMMING (COMPUTERS), COMPUTER PERSONNEL,
COMPUTER OPERATORS

(U)

IDENTIFIERS: TIME SHARING (COMPUTERS), JOVIAL,
TINT, ON-LINE SYSTEMS

(U)

THE USERS' GUIDE INSTRUCTS THE PROSPECTIVE
TIMESHARING USER ON HOW TO USE TINT, THE ON-
LINE TELETYPE JOVIAL INTERPRETER. THE GUIDE
PRESENTS A BRIEF INTRODUCTION TO THE TIME-SHARING
SYSTEM, A COMPLETE DESCRIPTION OF THE DIALECT OF
THE JOVIAL LANGUAGE THAT TINT INTERPRETS, AND THE
TSS COMMANDS THAT ARE REQUIRED WHEN OPERATING
TINT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 022

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
INPUT-OUTPUT FILE AND LIBRARY FUNCTIONS, THE Q-32
LISP 1.5 MOD. 2.5 SYSTEM.

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
SEP 65 16P KAHENY, S. L. 1 (U)

REPT. NO. TM-2337-102-00

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING LANGUAGES, INSTRUCTION
MANUALS), (COMPUTERS, SCHEDULING), COMPILERS,
INPUT/OUTPUT DEVICES, COMPUTER STORAGE DEVICES,
MAGNETIC TAPE

IDENTIFIERS: LISP, AN/PSQ-32, TIME
SHARING (COMPUTERS) (U)

THIS DOCUMENT SUPPLEMENTS TM-2337/101/00 (AD-
622 018) BY DESCRIBING THE INPUT-OUTPUT, FILE-
HANDLING AND LIBRARY FUNCTIONS OF Q-32 LISP 1.5
MOD. 2.5. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-623 738 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
ADVANCED COMPUTER TECHNIQUES APPLICABLE TO SPACE AND
RANGE PROBLEMS, (U)
OCT 65 17P WEST, GERALD D. :
REPT. NO. SP-2197

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMPUTERS, OPERATION), SPACE
FLIGHT, RANGES, PROGRAMMING LANGUAGES,
PROGRAMMING (COMPUTERS), STANDARDIZATION,
MULTIPLE OPERATION, EFFECTIVENESS (U)
IDENTIFIERS: TIME SHARING (COMPUTERS) (U)

COMPUTER INSTALLATIONS SERVING RANGE AND SPACE
NEEDS ARE CHARACTERIZED BY A LARGE NUMBER OF USER
ORGANIZATIONS, A VARIETY OF PROCESSING TASKS, AND
RAPID GROWTH. THESE CHARACTERISTICS TEND TO RESULT
IN PROBLEMS IN COMPUTER UTILIZATION. CERTAIN
ADVANCED PROGRAMMING CONCEPTS SUCH AS TIME-SHARING
AND MULTI-PROCESSING SEEM TO PROVIDE THE MEANS FOR
ALLEVIATING THE COMPUTER UTILIZATION PROBLEMS BEING
EXPERIENCED BY RANGE AND SPACE SUPPORT INSTALLATIONS.
THESE CONCEPTS ARE A PART OF THE METHODOLOGY OF THE
COMPUTER APPLICATIONS FIELD, AND ARE DISTINCT FROM
THE FUNCTIONAL REQUIREMENTS OF THE COMPUTER USER.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-623 796 9/2

LINCOLN LAB MASS INST OF TECH LEXINGTON
AN EXPERIMENTAL ON-LINE DATA STORAGE AND RETRIEVAL
SYSTEM.

(U)

DESCRIPTIVE NOTE: REVISED ED.

SEP 65 42P NOLAN, JOHN W. I

ARMENTI, AMADIO W. I

REPT. NO. TR-377

CONTRACT: AF19(628)-5167, NONR-4102(01)

MONITOR: ESD, TDR-65-466

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REVISION OF MANUSCRIPT SUBMITTED 3
FEB 66.

DESCRIPTORS: (DATA STORAGE SYSTEMS,
PROGRAMMING(COMPUTERS)),
(PROGRAMMING(COMPUTERS), DATA STORAGE
SYSTEMS), (DATA, INFORMATION RETRIEVAL), DATA
PROCESSING SYSTEMS, COMPUTERS, MAN-MACHINE
SYSTEMS

(U)

IDENTIFIERS: TIME SHARING(COMPUTERS), ON-LINE
SYSTEMS, FILE STRUCTURES, LIST PROCESSING

(U)

THIS REPORT DESCRIBES AN EXPERIMENTAL PROGRAM
SYSTEM DESIGNED TO TEST AND DEMONSTRATE ON-LINE
STORAGE AND RETRIEVAL OF FORMATTED DATA BASED ON
COMPLETE INTERNAL DESCRIPTIONS OF THE FILES. THE
USE OF INTERNAL DESCRIPTIONS ALLOWS EACH USER (WHO
NEED NOT BE A TRAINED PROGRAMMER) TO DEFINE,
MODIFY, AND CROSS-ASSOCIATE DATA FILES TO SUIT HIS
PARTICULAR NEEDS. THE EXPERIMENTAL PROGRAM SYSTEM
WAS IMPLEMENTED BY REMOTE USE OF THE COMPATIBLE
TIME-SHARING SYSTEM (CTSS) FACILITIES OF
PROJECT MAC AT THE MASSACHUSETTS INSTITUTE OF
TECHNOLOGY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-624 110 9/2 6/2
LINCOLN LAB MASS INST OF TECH LEXINGTON
ON LINE DOCUMENTATION OF THE COMPATIBLE TIME-SHARING
SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAY 65 50P WINETT, JOEL M. I
REPT. NO. TR-387
CONTRACT: AF19(628)-500 ,NONR-4102(01)
PROJ: AF-64SL
MONITOR: ESO , TRD-65-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING (COMPUTERS),
DOCUMENTATION), COMPATIBILITY, INFORMATION
RETRIEVAL, DATA STORAGE SYSTEMS, PROGRAMMING
LANGUAGES, COMPUTERS (U)
IDENTIFIERS: ON-LINE SYSTEMS, TIME
SHARING (COMPUTERS), COMIT PROGRAMMING LANGUAGE,
DESCRIPTORS, MAC PROJECT (U)

THE DISSEMINATION OF INFORMATION ABOUT COMPUTER
PROGRAMS IS HAMPERED BECAUSE OF THE LACK OF
CONFORMITY IN DOCUMENTATION, THE DELAYS INHERENT IN
ANY DISTRIBUTION SYSTEM, AND THE INABILITY TO SELECT
ONLY DESIRED INFORMATION WITHOUT BEING FLOODED WITH
INFORMATION WHICH IS NOT OF PRESENT INTEREST. AN
ON-LINE SYSTEM FOR STORING AND RETRIEVING INFORMATION
ABOUT THE PROGRAMS ASSOCIATED WITH THE COMPATIBLE
TIME-SHARING SYSTEM (CTSS) HAS BEEN DEVELOPED
TO BE INCLUDED AS A C'S COMMAND. THIS SYSTEM
WILL HELP TO DOCUMENT THE SYSTEM COMMANDS, SUPERVISOR
ENTRIES, LIBRARY SUBPROGRAMS, AND PUBLIC PROGRAMS.
THESE TYPES OF PROGRAMS HAVE BEEN CHOSEN SINCE
THERE IS AN URGENT NEED FOR HAVING THIS DOCUMENTATION
AVAILABLE ON DEMAND, I.E., ON-LINE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AU0396

AD-624 943 9/2 12/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
QUEUEING MODELS FOR FILE MEMORY OPERATION. (U)
DESCRIPTIVE NOTE: MASTER'S THESIS,
OCT 65 110P DENNING, PETER JAMES I
REPT. NO. MAC-TR-21
CONTRACT: NONR-4102(O1)
PROJ: NR-040-189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON PROJ. MAC.

DESCRIPTORS: (QUEUEING THEORY, COMPUTERS),
(DATA STORAGE SYSTEMS, OPERATION), MODEL
THEORY, OPERATIONS RESEARCH, REAL TIME.
MULTIPLE OPERATION (U)
IDENTIFIERS: THESES, TIME SHARING (COMPUTERS),
MACPROJECT (U)

A MODEL FOR THE AUXILIARY MEMORY FUNCTION OF A
SEGMENTED, MULTI-PROCESSOR, TIME-SHARED COMPUTER
SYSTEM IS SET UP. A DRUM SYSTEM IN PARTICULAR IS
DISCUSSED, ALTHOUGH NO LOSS OF GENERALITY IS IMPLIED
BY LIMITING THE DISCUSSION TO DRUMS. PARTICULAR
ATTENTION IS GIVEN TO THE QUEUE OF REQUESTS WAITING
FOR DRUM USE. IT IS SHOWN THAT A SHORTEST ACCESS
TIME FIRST QUEUE DISCIPLINE IS THE MOST EFFICIENT,
WITH THE ACCESS TIME BEING DEFINED AS THE TIME
REQUIRED FOR THE DRUM TO BE POSITIONED, AND IS
MEASURED FROM THE FINISH OF SERVICE OF THE LAST
REQUEST TO THE BEGINNING OF THE DATA TRANSFER FOR THE
SHORTEST ACCESS TIME QUEUE IS MADE, GIVING THE
MINIMUM ACCESS TIME PROBABILITY DISTRIBUTION,
EQUATIONS FOR THE NUMBER IN QUEUE, AND EQUATIONS FOR
THE WAIT IN THE QUEUE. SIMULATIONS WERE USED TO
VERIFY THESE EQUATIONS; THE RESULTS ARE DISCUSSED.
FINALLY, A GENERAL MARKOV MODEL FOR QUEUES IS
DISCUSSED IN AN APPENDIX. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-625 728 9/2 5/1
MASSACHUSETTS INST OF TECH CAMBRIDGE
THE PRIORITY PROBLEM, (U)
NOV 65 JSP GREENBERGER, MARTIN I
REPT. NO. MAC-1R-22
CONTRACT: NONR-4102(01)
PROJ: NR-048-189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC, PRESENTED AT
THE NATIONAL MEETING OF THE OPERATIONS SOCIETY OF
AMERICA (27TH), BOSTON, 6 MAY 65.

DESCRIPTORS: (+COMPUTERS, SCHEDULING),
MATHEMATICAL ANALYSIS, REAL TIME, COSTS,
NONLINEAR SYSTEMS (U)
IDENTIFIERS: MAC PROJECT, TIME
SHARING(COMPUTERS), ON-LINE SYSTEMS, MULTIPLE
ACCESS SYSTEM (U)

PRIORITY DECISIONS ARISE WHENEVER LIMITED
FACILITIES MUST BE APPORTIONED AMONG COMPETITIVE
DEMANDS FOR SERVICE. A PRIORITY OPERATION OF
CONTEMPORARY INTEREST IS SCHEDULING A TIME-SHARED
COMPUTER AMONG ITS CONCURRENT USERS. SERVICE
REQUIREMENTS ARE NOT KNOWN IN ADVANCE OF EXECUTION.
TO KEEP RESPONSE TIMES SHORT FOR SMALL REQUESTS,
SERVICE INTERVALS ARE PARTITIONED AND SEGMENTS ARE
SERVED SEPARATELY IN ROUND-ROBIN FASHION. A
MATHEMATICAL ANALYSIS PINPOINTS THE TRADEOFF BETWEEN
OVERHEAD AND DISCRIMINATION, IMPLICIT IN THIS
PROCEDURE, AND ALLOWS ALTERNATE STRATEGIES TO BE
COSTED. EXTENSIONS OF THE SIMPLE ROUND-ROBIN
PROCEDURE ARE SUGGESTED, THE OBJECTIVES OF TIME
SHARING ARE REVIEWED, AND IMPLICATIONS ARE DRAWN FOR
THE DESIGN OF FUTURE PRIORITY AND PRICING SYSTEMS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-627 077 18/4 15/3
EDGERTON GERMESHAUSEN AND GRIER INC SANTA BARBARA
CALIF
DASA FALLOUT AND TRANSIT DOSE RATE MEASUREMENT
SYSTEM, (U)
DESCRIPTIVE NOTE: PHASE I, MAY 64-JUL 65,
DEC 65 110P BROWN, JAMES E. INEBB, R. I. A.
CONTRACT: DA-49-146-XZ-292
MONITOR: NDL ,DASA TR-71,1680

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIOACTIVE FALLOUT, RADIATION
MEASUREMENT SYSTEMS), (*RADIATION MEASUREMENT
SYSTEMS, RADIOACTIVE FALLOUT), DOSE RATE,
MEASUREMENT, REAL TIME, DATA PROCESSING
SYSTEMS, DATA TRANSMISSION SYSTEMS, TELEMETER
SYSTEMS, NUCLEAR EXPLOSIONS (U)

THE REPORT PRESENTS THE RESULTS OF A STUDY AND
DESIGN EFFORT THAT DEMONSTRATES THE FEASIBILITY OF AN
IMPROVED SYSTEM FOR THE MEASUREMENT AND COLLECTION OF
RESIDUAL RADIATION DOSE RATE INFORMATION. THE
IMPROVED SYSTEM CONSISTS OF AS MANY AS 100 DATA
COLLECTION POINTS AT WHICH UP TO 200 DETECTORS MAY BE
LOCATED. DATA ARE TELEMETERED TO A CENTRALLY
LOCATED ONLINE COMPUTER FOR REAL TIME COMPUTATION.
SUITABLE PERFORMANCE CHARACTERISTICS AND SYSTEM
COMPATIBILITY HAVE BEEN DEMONSTRATED BY AN
EXPERIMENTAL DETECTOR STATION FABRICATED FOR TEST AND
EVALUATION. OTHER SYSTEM COMPONENTS WERE SELECTED
FROM AVAILABLE OFF-THE-SHELF COMMERCIAL ITEMS.
INCLUDED IN THE SYSTEM IS A PROVISION FOR
DIFFERENTIATION BETWEEN THE DOSE RATE CONTRIBUTED BY
THE DEPOSITED FALLOUT AND THE TRANSIT DOSE RATE.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-628 135 9/2
TRW SYSTEMS REDONDO BEACH CALIF
ON LINE COMPUTER SYMBOLIC MANIPULATION. (U)
DESCRIPTIVE NOTE: FINAL REPT, AUG 64-AUG 65,
JAN 66 199P BLACKWELL, FREDERICK W. ;
REPT. NO. 5253-A001-RU000;
CONTRACT: AF 30(602)-3516;
PROJ: AF-4594
TASK: 459404,
MONITOR: RADC , TR-65-376

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+PROGRAMMING(COMPUTERS),
PROGRAMMING LANGUAGES), (+PROGRAMMING LANGUAGES,
DIGITAL COMPUTERS), COMPILERS, DATA PROCESSING
SYSTEMS, ALGEBRA (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE DEVELOPMENT IS DESCRIBED OF AN ON-LINE COMPUTER
SYSTEM FOR SYMBOL MANIPULATION IN WHICH A USER CAN
ARBITRARILY DEFINE SYMBOLS AND RULES FOR OPERATING
WITH THESE SYMBOLS, AND THEN INSTRUCT THE COMPUTER
ON-LINE TO SELECTIVELY APPLY THE RULES. AT THE
BASIS OF THE SYSTEM IS A SMALL SET OF ELEMENTARY
SYMBOL MANIPULATION OPERATORS WHICH CAN BE PROGRAMMED
ON-LINE TO CARRY OUT MORE COMPLEX SYMBOLIC PROCESSES.
THE APPLICATION OF THE SYSTEM TO ALGEBRA IS
PRESENTED. THE RESULTANT SYSTEM FOR ALGEBRAIC SYMBOL
MANIPULATION ALLOWS THE USER TO HAVE THE COMPUTER
APPLY RULES OF ALGEBRA ON-LINE TO TRANSFORM
MATHEMATICAL EXPRESSIONS WHICH HE HAS INPUT IN A
NATURAL FORM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-629 667 9/2
GENERAL ELECTRIC CO WASHINGTON D C
THE APPLICATION OF LARGE-SCALE COMPUTERS TO U.S. AIR
FORCE INFORMATION SYSTEMS. (U)
DESCRIPTIVE NOTE: FINAL REPT., 15 JAN 65-15 JAN 66,
MAR 66 77P CAMPBELL, JOHN B. I
MCCABE, JOHN P. INEVANS, ESSIE S. I
CONTRACT: AF 19(628)-4963,
PROJ: AF-2801
TASK: 280101,
MONITOR: ESD. TE-66-137

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR FORCE, WAGES), (*COMPUTERS,
PERSONNEL MANAGEMENT), (*AIR FORCE PERSONNEL,
COMPUTERS), MATHEMATICAL MODELS, ALGORITHMS,
FEASIBILITY STUDIES, REMOTE CONTROL SYSTEMS (U)
IDENTIFIERS: ON-LINE SYSTEMS, TIME
SHARING(COMPUTERS) (U)

TWO AIR FORCE FUNCTIONS WERE EXAMINED TO
DETERMINE THE FEASIBILITY OF CENTRALIZING THE TASKS
AT A COMPUTER CENTER WITH REMOTE ACCESS. THE
APPLICATIONS EXAMINED: (1) AN OVERALL PAY SYSTEM,
AND (2) A SYSTEM TO AID IN THE ASSIGNMENT OF
PERSONNEL TO JOBS, PROVED INTERESTING IN THEIR
DEMANDS UPON LARGE-SCALE DATA-HANDLING AND
MANIPULATION CAPABILITIES. FEASIBILITY OF BOTH THE
PAY AND MAN-JOB MATCH SYSTEMS WAS SHOWN AND EACH WAS
EXAMINED AS A TIME-SHARING TYPE OF APPLICATION.
THE GENERALIZED TIME-SHARING MODEL SHOWED
CENTRALIZATION OF ALL COMPUTATIONAL POWER TO BE MORE
ECONOMICAL THAN DISTRIBUTING LOGICAL CAPABILITY TO
REMOTE STATIONS. THREE SUPPORTING ANALYTIC STUDIES
WERE PERFORMED. THE FIRST DEALS WITH A MEANS FOR
PARTITIONING A LARGE FILE TO PERMIT, IN SOME CASES,
GREATLY REDUCED SEARCHING TIMES. THE SECOND DEALS
WITH A MATHEMATICAL MODEL FOR A TIME-SHARED COMPUTER
SYSTEM WHICH ALLOWS FOR ANALYTICAL CALCULATION OF
PROCESSING TIMES AT EACH TERMINAL AS A FUNCTION OF
SYSTEM LOADING. THE THIRD INVESTIGATES THREE
COMPUTATIONAL ALGORITHMS FOR PERFORMING MAN-JOB MATCH
CALCULATIONS. ESTIMATES OF PROCESSING TIMES ARE
GIVEN, AND THE METHODS COMPARED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-632 473 5/2 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE BOLD (BIBLIOGRAPHIC ON-LINE DISPLAY) SYSTEM, (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
APR 66 27P BURNAUGH, HOWARD P. I
REPT. NO. SP-2338/000/01,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-615 718.

DESCRIPTORS: (*INFORMATION RETRIEVAL, REAL TIME),
(*BIBLIOGRAPHIES, *DISPLAY SYSTEMS),
CLASSIFICATION, SUBJECT INDEXING, COMPUTATIONAL
LINGUISTICS, PROGRAMMING (COMPUTERS), MAGNETIC
TAPE, TELETYPE SYSTEMS (U)
IDENTIFIERS: FILE STRUCTURES, TIME SHARING, ON-
LINE SYSTEMS, LIGHT PENS, BOLD (BIBLIOGRAPHIC ON-
LINE DISPLAY) (U)

THE BOLD (BIBLIOGRAPHIC ON-LINE DISPLAY)
SYSTEM SERVES AS A GENERAL PURPOSE VEHICLE FOR
RESEARCH ON THE COMPONENTS OF A REAL-TIME RETRIEVAL
SYSTEM. SPECIFIC SUBJECTS FOR INVESTIGATION ARE
INDEXING, CLASSIFICATION AND CATEGORIZING SCHEMES,
FILE ORGANIZATION, AND USER-SYSTEM COMMUNICATION.
THE PROGRAM OPERATES IN A 'TIME-SHARING'
ENVIRONMENT DOING INDEPENDENT RETRIEVAL FOR MULTIPLE
SIMULTANEOUS USRS. A RETRIEVAL STATION MAY BE ANY
TELETYPE CONNECTED TO THE TIME-SHARING SYSTEM. A
STATION MAY BE AUGMENTED WITH A CRT CONSOLE AND A
LIGHT PEN FOR RAPID DISPLAYING OF THE RETRIEVAL
INFORMATION. RETRIEVAL IS EFFECTED BY THE
SPECIFICATION OF CATEGORIES AND/OR RETRIEVAL PHRASES,
USING BOOLEAN CONNECTORS. THERE ARE TWO MODES
FOR RETRIEVAL OPERATION: THE BROWSE MODE AND THE
SEARCH MODE. IN THE BROWSE MODE THE USER MAY
SPECIFY BROAD CATEGORIES AND RETRIEVAL TERMS AND THEN
BROWSE THROUGH THE RETRIEVAL INFORMATION ENTRY BY
ENTRY. THE USER DESIGNATES WHAT INFORMATION IS TO
BE RETURNED. THIS MAY BE ANYTHING THAT IS DEFINED
IN THE DATA BASE, AND MAY RANGE FROM A SINGLE
COMPONENT (SUCH AS AUTHOR, TITLE, ETC., FOR A
BIBLIOGRAPHIC DATA SET) TO A COMPLETE BODY OF TEXT
(I.E., ABSTRACT). (AUTHOR) (FOR PRESENTATION
AT THE THIRD ANNUAL COLLOQUIUM ON INFORMATION
RETRIEVAL, UNIV. OF PENNSYLVANIA, MAY 12-13.
1966) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 100396

AD-433 930 7/2 5/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
SEMIANNUAL TECHNICAL SUMMARY REPORT TO THE DIRECTOR,
ADVANCED RESEARCH PROJECTS AGENCY FOR THE PERIOD 18
NOVEMBER 1965 THROUGH 17 MAY 1966. (U)
DESCRIPTIVE NOTE; TECHNICAL MEMO.;
MAY 66 54P BAUM, C. I
REPT. NO. TM-687/004/00,
CONTRACT: AF 19(629)-5166, ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+INFORMATION RETRIEVAL, STATE-OF-
THE-ART REVIEWS), (+PROGRAMMING LANGUAGES, STATE-
OF-THE-ART REVIEWS), (+DATA PROCESSING SYSTEMS,
COMPUTERS), (+COMPUTERS, SCHEDULING), SYNTAX,
PROGRAMMING(COMPUTERS), COMPILERS, SYSTEMS
ENGINEERING, COMMAND + CONTROL SYSTEMS (U)
IDENTIFIERS: LUCID; TIEL; LISP; TIME
SHARING(COMPUTERS) (U)

THIS REPORT DESCRIBES WORK DONE IN THE ARPA-
SPONSORED INFORMATION PROCESSING TECHNIQUES AND
COMMAND AND CONTROL RESEARCH AND LABORATORY
PROGRAM FROM 18 NOVEMBER 1965 THROUGH 17 MAY
1966. PROJECTS COVERED ARE TIME-SHARING,
DATA BASE SYSTEMS, COMPUTER PROCESSING OF
NATURAL LANGUAGE, AND THE RESEARCH AND
TECHNOLOGY LABORATORY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-634 325 9/2 5/1 12/2
CARNEGIE INST OF TECH PITTSBURGH PA GRADUATE SCHOOL OF
INDUSTRIAL ADMINISTRATION
AN EVALUATION OF COMMERCIAL TIME SHARING
SYSTEMS. (U)
DESCRIPTIVE NOTE: MANAGEMENT SCIENCES RESEARCH REPT.,
66 60P GOLD, H. M. ISTEADRY, A. C. I
REPT. NO. MSRR-71,
CONTRACT: NONR-760(24),
PROJ: NR-047-040,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ALSO UNDER CONTRACT NONR-
4102(01) PROJ. MAC AT M.I.T.

DESCRIPTORS: (+COMPUTERS, +OPERATIONS RESEARCH),
(+MANAGEMENT ENGINEERING, COMPUTERS), DATA
PROCESSING SYSTEMS, COMMERCE (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), MULTIPLE
ACCESS SYSTEM (U)

THE DESIGN OF COMPUTERS AND SYSTEMS WHICH AFFORD
SIMULTANEOUS MULTIPLE-USER ACCESS HAS BEEN A SUBJECT
OF INDUSTRIAL AND ACADEMIC RESEARCH FOR SEVERAL
YEARS. INSTALLATION OF SEVERAL 'TIME-SHARED'
COMPUTER SYSTEMS HAS PROCEEDED WITH ADDITIONAL
RESEARCH AND DEVELOPMENT DEVOTED TO THEIR
IMPROVEMENT. THE MAJOR EFFORT EVIDENCED, HOWEVER,
HAS BEEN DIRECTED TO THE DEVELOPMENT OF THESE
FACILITIES AS SYSTEMS WITH ONLY SECONDARY ATTENTION
PAID TO THE REQUIREMENTS OF THE POTENTIAL USERS AND
ALMOST NONE TO MANAGEMENT USERS -- THE SUBJECT OF
INTEREST HERE. IN THIS PAPER WE WILL ATTEMPT TO
EVALUATE CERTAIN ASPECTS OF TIME-SHARED SYSTEMS USING
THE REQUIREMENTS OF THE POTENTIAL MANAGERIAL USER AS
UNITS OF ANALYSIS. POSSIBLE APPLICATIONS OF TIME-
SHARING ARE DISCUSSED. DESCRIPTION OF USAGE IN
EXTANT SYSTEMS IS INCLUDED WHERE APPLICABLE BUT THE
FAR-MORE-VAST POTENTIAL USES CONSTITUTE THE PRIME
FOCUS. IN ADDITION, TWO COMMERCIAL TIME-SHARING
SERVICES AVAILABLE TO MANY COMPANIES ARE DESCRIBED IN
DETAIL AS POSSIBLE PREDECESSORS OF ENVISIONED
GIGANTIC CENTRALIZED COMPUTER SYSTEMS WHOSE ECONOMIES
OF SCALE AND ELIMINATION OF REDUNTANT DATA STORAGE
MAKE THEIR USE BY EVEN THE LARGEST OF COMPANIES
ADVANTAGEOUS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-635 215 9/2 12/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING OPERATIONS AND MANAGEMENT. (U)
MAR 66 20P FIALA, F. T. I
REPT. NO. SP-2417;
CONTRACT: AF 19(628)-5146, ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
DATA PROCESSING MANAGEMENT ASSOCIATION CONFERENCE,
CHICAGO, ILL., 20-24 JUN 66.

DESCRIPTORS: (+OPERATIONS RESEARCH, +DIGITAL
COMPUTERS), (+MANAGEMENT ENGINEERING, DIGITAL
COMPUTERS), COMPUTER OPERATORS, SCHEDULING (U)
IDENTIFIERS: TIME SHARING(COMPUTERS), AN/FS4-
32 (U)

THIS PAPER DESCRIBES THE OPERATION OF THE TIME-
SHARING SYSTEM NOW IN USE IN THE RESEARCH AND
TECHNOLOGY LABORATORY OF THE SYSTEM
DEVELOPMENT CORPORATION. THE SCOPE OF THE
PAPER COVERS THE OPERATOR'S DUTIES, PLANT LAYOUT, AND
CONSIDERATIONS THAT OPERATIONS MANAGERS SHOULD BE
GIVING TO PRESENT AND INHERENT PROBLEMS POSED BY THE
NEW METHODS OF COMPUTER OPERATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-635 966 9/2 13/6
MASSACHUSETTS INST OF TECH CAMBRIDGE
TRAFFIC CONTROL IN A MULTIPLEXED COMPUTER
SYSTEM. (U)
DESCRIPTIVE NOTE: DOCTORAL THESIS.
JUN 66 87P SALTZER, JEROME HOWARD I
REPT. NO. MAC-TR-30.
CONTRACT: NONR-4102101,
PROJ: NR-048-189.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (*TRAFFIC, CONTROL), (*COMPUTERS,
TRAFFIC), SCHEDULING, MULTIPLE OPERATION (U)
IDENTIFIERS: MAC PROJECT (U)

THE THESIS DESCRIBES A SCHEME FOR PROCESSOR
MULTIPLEXING IN A MULTIPLE USER, MULTIPLE PROCESSOR
COMPUTER SYSTEM. THE SCHEME IS BASED UPON A
DISTRIBUTED SUPERVISOR WHICH MAY BE DIFFERENT FOR
DIFFERENT USERS. THE PROCESSOR MULTIPLEXING METHOD
PROVIDES SMOOTH INTER-PROCESS COMMUNICATION,
TREATMENT OF INPUT/OUTPUT CONTROL AS A SPECIAL CASE
OF INTER-PROCESS COMMUNICATION, AND PROVISION FOR A
USER TO SPECIFY PARALLEL PROCESSING OR SIMULTANEOUS
INPUT/OUTPUT WITHOUT INTERRUPT LOGIC. BY TREATMENT
OF PROCESSORS IN AN ANONYMOUS POOL, SMOOTH AND
AUTOMATIC SCALING OF SYSTEM CAPACITY IS OBTAINED AS
MORE PROCESSORS AND MORE USERS ARE ADDED. THE BASIC
DESIGN HAS INTRINSIC OVERHEAD IN PROCESSOR TIME AND
MEMORY SPACE WHICH REMAINS PROPORTIONAL TO THE AMOUNT
OF USEFUL WORK THE SYSTEM DOES UNDER EXTREMES OF
SYSTEM SCALING AND LOADING. THE DESIGN IS NOT
LIMITED TO A SPECIFIC HARDWARE IMPLEMENTATION. IT IS
INTENDED TO HAVE WIDE APPLICATION TO MULTIPLEXED,
MULTIPLE PROCESSOR COMPUTER SYSTEMS. THE PROCESSOR
TRAFFIC CONTROLLER DESCRIBED HERE IS AN INTEGRAL PART
OF MULTICS, A MULTIPLEXED INFORMATION AND
COMPUTING SERVICE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-636 839 4/2

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

JOB DESCRIPTIONS AND SCHEDULING IN THE SDC 9-32 TIME-

SHARING SYSTEM,

(U)

DESCRIPTIVE NOTE; TECHNICAL MEMO.

JUN 46 31P MCISAAC, PAUL V. I

REPT. NO. TM-2394,

CONTRACT: AF 19(448)-5164, ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*OPERATIONS RESEARCH, *DIGITAL
COMPUTERS), SCHEDULING, ALGORITHMS,

OPTIMIZATION

(U)

IDENTIFIERS: TIME SHARING (COMPUTERS)

(U)

THIS PAPER DESCRIBES THE CURRENT SDC 9-32 TIME-
SHARING SYSTEM SCHEDULING ALGORITHM, PRESENTS
SOME SIMULATION RESULTS AND OBSERVATIONS WHICH LED TO
ITS DESIGN AND IMPLEMENTATION, AND EVALUATES THE
ALGORITHM ON THE BASIS OF EMPIRICAL SYSTEM DATA.
GENERAL OBSERVATIONS ON SCHEDULING ARE ALSO
PRESENTED IN ORDER TO PROVIDE INSIGHT INTO THE
PROBLEM AND TO ASSIST SYSTEM DESIGNERS IN THE
DEVELOPMENT OF OPTIMAL SCHEDULING ALGORITHMS FOR
FUTURE TIME-SHARED SYSTEMS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-636 961 1772
RAND CORP SANTA MONICA CALIF
THE IMPACT OF THE NEW TECHNOLOGY ON COMMAND SYSTEM
DESIGN. (U)
JUL 64 11P WESSEL, ANDREW E. I
REPT. NO. P-3409,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
CONGRESS ON INFORMATION SYSTEM SCIENCE AND
TECHNOLOGY (3RD), BUCK HILL FALLS, PENNSYLVANIA,
NOVEMBER 1966.

DESCRIPTORS: (COMMAND + CONTROL SYSTEMS, STATE-
OF-THE-ART REVIEWS), REAL TIME, DATA PROCESSING
SYSTEMS, PROGRAMMING (COMPUTERS), MANAGEMENT
PLANNING, SYSTEMS ENGINEERING (U)

A FEW YEARS AGO S. H. GENENSKY AND AUTHOR WROTE A
PAPER TITLED, SOME THOUGHTS ON DEVELOPING
FUTURE COMMAND AND CONTROL SYSTEMS. IN
BRIEF, THE PAPER ARGUED FOR A VERSION OF AN 'ON-SITE'
DEVELOPMENT AND DESIGN PHILOSOPHY SUPPORTED BY A
MILITARY SERVICE CENTER WHICH WOULD PROVIDE THE
APPROPRIATE SPECIALISTS ON LOAN TO THE GIVEN USER
COMMAND. THIS PAPER RAISES SOME QUESTIONS AS TO
WHETHER THE NEWER CAPABILITIES FOR 'ON-LINE'
INTERACTIONS BETWEEN USERS AND AUTOMATED SYSTEMS HAVE
OUTMODDED THE PREVIOUS THINKING ON THE SUBJECT OF
COMMAND SYSTEM DESIGN. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-636 993 9/2 S/8
RAND CORP SANTA MONICA CALIF
JOSS: INTRODUCTION TO A HELPFUL ASSISTANT. (U)
JUL 66 BOP BAKER, C. L. I
REPT. NO. RM-5050-PR,
CONTRACT: AF 49(638)-1700,

UNCLASSIFIED REPORT
AVAILABILITY: RAND CORP. 1700 MAIN ST., SANTA
MONICA, CALIF. \$2.00.
SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMPUTERS, *MAN-MACHINE SYSTEMS),
REAL TIME, DIGITAL COMPUTERS, SPECIAL PURPOSE
COMPUTERS, REMOTE CONTROL SYSTEMS, SYSTEMS
ENGINEERING (U)
IDENTIFIERS: JOSS (JOHNNIAC OPEN SHOP
SYSTEM) (U)

A STEP-BY-STEP DEMONSTRATION OF JOSS--A SYSTEM
DESIGNED TO PROVIDE THE INDIVIDUAL SCIENTIST AND
ENGINEER WITH A PERSONAL COMPUTATIONAL SERVICE
IMMEDIATELY AVAILABLE, WHENEVER REQUIRED, IN HIS OWN
WORKING ENVIRONMENT. THE DISTINGUISHING FEATURES
OF JOSS ARE: MOBILE CONSOLES EQUIPPED WITH
ELECTRIC TYPEWRITERS FOR INPUT AND OUTPUT; HIGHLY
READABLE AND POWERFUL LANGUAGE FOR NUMERIC
COMPUTATION; ENGLISH CAPITALIZATION, SPELLING, AND
PUNCTUATION RULES; EASY EDITING; QUICK RESPONSE;
EXACT INPUT; FAMILIAR DECIMAL ARITHMETIC; EXACT
OUTPUT; AND REPORT-QUALITY FORMATTED OUTPUT. THE
INTIMATE INTERACTION BETWEEN MAN AND MACHINE PERMITS
THE JOSS USER TO EXERCISE JUDGMENT CONTINUALLY
DURING THE COURSE OF COMPUTATION, CHANGING AND
MODIFYING THE PROCEDURE AS HE WISHES. THIS IS ONE
OF THE UNIQUE ASPECTS THAT DISTINGUISHES JOSS FROM
OTHER SYSTEMS AND HAS LED TO ITS ENTHUSIASTIC
ADOPTION BY THE RAND STAFF. THIS TALK WAS
PRESENTED TO THE ELEVENTH ANNUAL DATA
PROCESSING CONFERENCE AT THE UNIVERSITY OF
ALABAMA BIRMINGHAM CENTER ON 4 MAY 1966.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-637 192 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
MODELS AND DATA STRUCTURES FOR DIGITAL LOGIC
SIMULATION.
DESCRIPTIVE NOTE: MASTER'S THESIS.
JUN 66 148P SMITH, DONALD LEIGH I
REPT. NO: MAC-TR-31,
CONTRACT: NONR-4102(01),
PROJ: NR-048-109, RR-003-09-01

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER LOGIC,
*MODELS(SIMULATIONS)), DIGITAL COMPUTERS,
COMBINATORIAL ANALYSIS, ALGORITHMS, DATA
PROCESSING SYSTEMS
IDENTIFIERS: TIME SHARING(COMPUTERS), THESES

(U)

(U)

A DIGITAL LOGIC SIMULATION SYSTEM IS PROPOSED FOR DESIGN VERIFICATION. LOGIC TO BE SIMULATED IS SPECIFIED WITH A HIGH-LEVEL REGISTER TRANSFER DESIGN LANGUAGE, AND THE SIMULATION SYSTEM OPERATES ON-LINE ON A LARGE TIME-SHARED COMPUTER. THE PROBLEM OF SELECTING ADEQUATE CIRCUIT AND SIGNAL MODELS FOR THIS PURPOSE IS CONSIDERED. MODELS ARE PROPOSED WITH SUFFICIENT TIMING DETAIL TO ALLOW THE SIMULATION SYSTEM TO DETECT TIMING ERRORS WHICH CURRENTLY ARE FOUND BY MANUAL CHECKING OR PROTOTYPE DEBUGGING. A DATA STRUCTURE FOR REPRESENTING IDEALIZED CIRCUIT AND SIGNAL MODELS AND A MATCHING SIMULATION ALGORITHM IS DISCUSSED. THE DATA STRUCTURE IS A DIRECT REPRESENTATION OF A COMPLETE SUBSET OF THE DESIGN LANGUAGE AND IS ORGANIZED SO THAT IT CAN BE INCREMENTALLY MODIFIED TO REFLECT DESIGN CHANGES. THE SIMULATION ALGORITHM IS VERY EFFICIENT BECAUSE COMBINATIONAL LEVELS ARE RE-EVALUATED ONLY IF THEIR VALUES ARE NEEDED AND MAY HAVE CHANGED SINCE LAST EVALUATED. THE DATA STRUCTURE IS EXPANDED TO REPRESENT DETAILED CIRCUIT AND SIGNAL MODELS. A METHOD OF INTERMIXING IDEALIZED AND DETAILED MODELS AND EFFICIENTLY SIMULATING VERY LARGE DESIGNS IS DISCUSSED. EXTENSIONS ARE PROPOSED TO THE DESIGN LANGUAGE SO THAT IT CAN BE USED TO SPECIFY MODEL PARAMETERS AND SERVE AS THE SIMULATION COMMAND LANGUAGE. (AUTHOR)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-637 215 9/2

MASSACHUSETTS INST OF TECH CAMBRIDGE
INPUT/OUTPUT IN TIME-SHARED, SEGMENTED,
MULTIPROCESSOR SYSTEMS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS.

FEB 66 75P SMITH, ARTHUR ANSHEL I

REPT. NO. MAC-TR-28,

CONTRACT: NONR-4102(01),

PROJ: NR-048-189,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, *SPECIAL
PURPOSE COMPUTERS), OPERATIONS RESEARCH, DIGITAL
COMPUTERS, MULTIPLE OPERATION (U)

IDENTIFIERS: TIME SHARING (COMPUTERS), THESES (U)

AFTER INTRODUCING AND DEFINING THE CONCEPTS OF
TIME-SHARING, SEGMENTATION, AND MULTIPROCESSING, TWO
CLASSES OF SYSTEMS INCORPORATING THESE ARE
INTRODUCED. BOTH CLASSES USE ASSOCIATIVE MEMORIES,
AS 'LOOK BEHIND' DEVICES TO SPEED THE OPERATION OF
ADDRESSING THE SEGMENTED MEMORY, WITH THE DISTINCTION
BETWEEN CLASSES BEING THE LOCATION OF THE ASSOCIATIVE
MEMORY. IN ONE CLASS, THERE IS ONE ASSOCIATIVE
MEMORY FOR EACH PROCESSING ELEMENT, NO MATTER HOW
MANY MAIN MEMORY UNITS ARE CONNECTED TO A PROCESSOR.
IN THE SECOND CLASS, THERE IS ONE ASSOCIATIVE MEMORY
FOR EACH MAIN MEMORY UNIT, WITH THE PROCESSORS
SHARING THE ASSOCIATIVE MEMORY. AFTER INTRODUCING
TWO CRITERIA FOR INPUT/OUTPUT SYSTEMS, THAT THE
OVERHEAD ASSOCIATED WITH THEIR USE BE SMALL AND THAT
THEY MAY BE PHYSICALLY AND LOGICALLY SIMPLE, AND
DESCRIBING FURTHER OPERATIONS OF THE SYSTEMS, IT IS
CONCLUDED THAT MEMBERS OF THE SECOND CLASS, HAVING
SHARED ASSOCIATIVE MEMORIES, BEST MEET THESE
CRITERIA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-640 647 5/8 5/2 5/7 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
ON-LINE INTERACTIVE DISPLAYS IN APPLICATION TO
LINGUISTIC ANALYSIS AND INFORMATION PROCESSING AND
RETRIEVAL. (U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
SEP 66 22P SIMMONS, R. F. ;
REPT. NO. SP-2432/001/00,
CONTRACT: AF 19(628)-5166,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
SYMPOSIUM ON MAN/MACHINES INTERACTION, PARIS
(FRANCE), 10-17 OCT 66. SEE ALSO AD-615 718,
AD-632 473.

DESCRIPTORS: (*MAN-MACHINE SYSTEMS, DISPLAY
SYSTEMS), INFORMATION RETRIEVAL, COMPUTATIONAL
LINGUISTICS, REPORTS, BIBLIOGRAPHIES (U)
IDENTIFIERS: ON-LINE SYSTEMS,
KERNELIZATION(SENTENCES), BOLD, SENTENCES (U)

AS COMPUTERS ARE USED FOR INCREASINGLY COMPLEX
OPERATIONS SUCH AS RETRIEVING DOCUMENTS AND ANALYZING
SENTENCES, IT BECOMES APPARENT THAT HUMAN DECISION-
MAKING IS STILL AN ESSENTIAL ELEMENT OF THE PROCESS.
THE USE OF THE ON-LINE INTERACTIVE CAPABILITY OF
TODAY'S THIRD-GENERATION COMPUTERS SUPPORTED BY
TYPEWRITER AND DISPLAY SCOPE TERMINALS MAKES THE
CONSTRUCTION OF COMPUTER-AIDED SYSTEMS FOR THESE
COMPLEX TASKS AN ATTRACTIVE APPROACH. TWO SUCH
SYSTEMS ARE DESCRIBED IN THE PAPER. ONE IS BOLD,
A DOCUMENT RETRIEVAL SYSTEM THAT OFFERS THE USER AN
ON-LINE BROWSING CAPABILITY AS WELL AS THE ABILITY TO
RETRIEVE DOCUMENTS OR CONSTRUCT BIBLIOGRAPHIES USING
COMPUTER-DRIVEN DISPLAY SCOPES AND TYPEWRITERS.
THE OTHER IS A SENTENCE-ANALYSIS SYSTEM THAT
COMPUTES DEPENDENCY ANALYSES, PHRASE STRUCTURE
ANALYSES AND KERNEL SETS FOR EACH SENTENCE IT IS
GIVEN. THIS SYSTEM PRODUCES AND DISPLAYS MULTIPLE
ANALYSES AND ALLOWS THE USER TO CORRECT THEM OR TO
SELECT THOSE WHICH ARE SATISFACTORY. THE CONCLUSION
IS THAT FOR SOME TIME TO COME COMPLEX INFORMATION
PROCESSING SYSTEMS--PARTICULARLY THOSE CONCERNED WITH
NATURAL LANGUAGES--WILL REMAIN AT THE LEVEL OF
SEMI-AUTOMATIC COMPUTER AIDS TO HUMAN INFORMATION
PROCESSING. AS SUCH, THEIR USEFULNESS CAN BE
MAXIMIZED BY OPTIMAL USE OF INTERACTIVE DISPLAY
TECHNOLOGY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-640 652 5/8 5/2 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
UTILIZATION OF ON-LINE INTERACTIVE DISPLAYS. (U)
DESCRIPTIVE NOTE; PROFESSIONAL PAPER,
AUG 66 35P BORKO, H. I
REPT. NO. SP-2575,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
CONGRESS ON INFORMATION SYSTEM SCIENCE AND
TECHNOLOGY (3RD), BUCKLE FALLS, PENNSYLVANIA,
NOVEMBER 20-23 1966.

DESCRIPTORS: (MAN-MACHINE SYSTEMS, DISPLAY
SYSTEMS), (INFORMATION RETRIEVAL, MAN-MACHINE
SYSTEMS), PROGRAMMING (COMPUTERS), PROBLEM
SOLVING, DECISION MAKING, DATA PROCESSING SYSTEMS,
SYNTAX, TELETYPE SYSTEMS, CATHODE RAY TUBES,
COMPUTERS (U)

THE VERSATILITY AND ADVANTAGES OF USING ON-LINE
INTERACTIVE DISPLAYS ARE ILLUSTRATED BY EXAMPLES FROM
(1) THE GENERAL PURPOSE DISPLAY SYSTEM
(GPDS), (2) THE PATTERN LEARNING PARSER
(PLP II), AND (3) THE BIBLIOGRAPHIC ON-
LINE DISPLAY SYSTEM (BOLD). ALTHOUGH THESE
SYSTEMS ARE DESIGNED FOR DIFFERENT PURPOSES THEY ALL
UTILIZE DISPLAYS AS COMMUNICATION CHANNELS BY WHICH
THE MAN AND THE MACHINE ARE ABLE TO ENGAGE IN A
DIALOG AND WORK TOGETHER TO SOLVE PROBLEMS. THE
COMPUTER PROCESSES DATA RAPIDLY AND DISPLAYS THE
RESULTS. THE INFORMATION PROVIDED IN THE DISPLAYS
ENABLES THE USER TO STEER AND CONTROL THE STEP-BY-
STEP PROGRESS OF THE PROGRAM; NOT ONLY ARE
PROBLEMS SOLVED MORE EFFICIENTLY, BUT THE USERS ARE
MORE SATISFIED BY THE RESULTS ACHIEVED. (AUTHOR)

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UNCLASSIFIED

A00396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-642 255 9/2 5/2
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF
ELECTRICAL ENGINEERING
THE PDP-5 AS A SATELLITE PROCESSOR, (U)
MAY 66 15P WEINBERG, PAUL R. I
WOLFBERG, MICHAEL S. I
CONTRACT: NONR-551(40)

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN DECUS PROCEEDINGS P51-64
MAY 1966.

DESCRIPTORS: (•DATA PROCESSING SYSTEMS,
•INFORMATION RETRIEVAL), REAL TIME, MULTIPLE
OPERATION, REMOTE CONTROL SYSTEMS, INPUT-OUTPUT
DEVICES, COMPUTERS (U)
IDENTIFIERS: PDP-5, IBM 7040 (U)

A PDP-5 AT THE UNIVERSITY OF PENNSYLVANIA IS
ATTACHED TO AN IBM 7040 THROUGH A HIGH SPEED DATA
CHANNEL. IN THIS CONFIGURATION IT SERVES AS AN
INTERMEDIARY BETWEEN THE 7040 AND SEVERAL REMOTE
CONSOLES INCLUDING CHARACTER DISPLAYS AND
TELETYPES. THE PURPOSE IS TO PROVIDE REAL-TIME
INFORMATION RETRIEVAL SYSTEMS WITH A REMOTE CONSOLE
CAPABILITY. THIS PAPER CONSISTS OF TWO PARTS:
THE FIRST SECTION DESCRIBED THE INTERACTION AMONG
THE VARIOUS SUBSYSTEMS, AND THE SECOND SECTION
PRESENTS AN ACCOUNT OF THE ASSEMBLY OF PDP-5
PROGRAMS ON THE 7040. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-643 313 9/2 12/1
COMPUTER RESEARCH CORP NEWTON MASS
MAGIC PAPER - AN ON-LINE SYSTEM FOR THE MANIPULATION
OF SYMBOLIC MATHEMATICS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
APR 66 67P CLAPP, LEWIS C. JORDAN, DALE
E. IWAX, ELLEN J. WOLF, ROBERT S. I
REPT. NO. R-105-1
CONTRACT: AF 19(628)-5098
PROJ: J-105

UNCLASSIFIED REPORT

DESCRIPTORS: (+MATHEMATICS, +DATA PROCESSING
SYSTEMS), EQUATIONS, ALGEBRA, OPERATION (U)
IDENTIFIERS: ON-LINE SYSTEMS, MAGIC PAPER SYSTEM,
SYMBOLIC MATHEMATICS, LIGHT PENS, +DISPLAY
SYSTEMS (U)

THE REPORT DESCRIBES THE PRELIMINARY VERSION OF THE
MAGIC PAPER SYSTEM. THROUGH A CONVERSATIONAL
INTERACTION, THE SYSTEM AIDS THE SCIENTIST, ENGINEER
OR MATHEMATICIAN AS HE PERFORMS SYMBOLIC OPERATIONS
ON LINEAR ALGEBRAIC EQUATIONS. THE USER BEGINS BY
ENTERING HIS INITIAL EQUATIONS AND CONDITIONS THROUGH
A MATHEMATICAL KEYBOARD. AS HE TYPES THESE
EQUATIONS, THEY ARE DISPLAYED ON A FLICKER-FREE SCOPE
IN STANDARD MATHEMATICAL NOTATION. USING A PUSH-
BUTTON CONTROL PANEL AND A LIGHT PEN, HE MAY SELECT
EXPRESSIONS AND OPERATIONS WHICH ARE TO BE PERFORMED
ON THEM. IF THE OPERATION IS LEGAL, THE SYSTEM
GENERATES A NEW EQUATION WHICH IS THEN ADDED TO THE
SCOPE DISPLAY. WITH THE BASIC SET OF OPERATIONS,
THE USER MAY CREATE NEW OPERATORS WHICH CAN THEN BE
ADDED TO THE SYSTEM. HE CAN ALSO INTRODUCE SPECIAL
NOTATIONAL CONVENTIONS. THE USER HAS CONSIDERABLE
CONTROL WHICH ENABLES HIM TO PERSONALIZE THE SYSTEM
TO MEET HIS OWN PARTICULAR NEEDS. (AUTHOR) (U)

UNCLASSIFIED

A00396

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-644 339 9/2
RAND CORP SANTA MONICA CALIF
JOSS: INTRODUCTION TO THE SYSTEM
IMPLEMENTATION,
NOV 66 21P BRYAN, G. E. I
REPT. NO. P-3486

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE FALL SYMPOSIUM OF
DIGITAL EQUIPMENT COMPUTER USERS SOCIETY (DECUS),
LAWRENCE RADIATION LABORATORY, BERKELEY,
CALIFORNIA, NOVEMBER 4 AND 5, 1966.

DESCRIPTORS: (*DIGITAL COMPUTERS, *TIME
SHARING), OPERATION, PROBLEM SOLVING
IDENTIFIERS: JOSS

(U)

(U)

JOSS IS A TIME-SHARED COMPUTER SYSTEM THAT PROVIDES
FOR THE SOLUTION OF NUMERICAL PROBLEMS VIA AN EASILY
LEARNED LANGUAGE AT REMOTE TYPEWRITER CONSOLES.
THE PDP-6 HARDWARE USED TO IMPLEMENT JOSS
CONSISTS OF 32,000 WORDS OF 1.75M SEC CORE MEMORY, A
1-MILLION-WORD 4M SEC DRUM, A 6-MILLION-WORD
DISCFILE, AND VARIOUS PERIPHERAL DEVICES. A
SPECIAL DATA RELOCATION MODE FOR MEMORY REFERENCES
HAS BEEN ADDED TO FACILITATE INTERPRETATION OF JOSS
PROGRAMS. THE JOSS CONSOLES, BUILT AROUND A
SELECTRIC I/O TYPEWRITER, WERE SPECIALLY
MANUFACTURED TO RAND SPECIFICATIONS. FEATURES
INCLUDE FULL DUPLEX SIGNALING, LINE PARITY CHECKING,
A PAGE EJECT MECHANISM, AND SEVERAL BUTTONS AND
LIGHTS TO CONTROL AND REPORT CONSOLE STATUS. THE
STAND-ALONE JOSS SOFTWARE CONSISTS OF THE JOSS
LANGUAGE INTERPRETER AND ITS ARITHMETIC SUBROUTINES.
A MONITOR FOR USER SCHEDULING AND RESOURCE
ALLOCATION, AND I/O ROUTINES FOR THE DISC, DRUM,
CONSOLES, AND OTHER PERIPHERAL DEVICES. JOSS
SERVICE IS CURRENTLY AVAILABLE TO NEARLY 500 USERS
THROUGH 34 CONSOLES, SIX OF WHICH ARE REMOTE TO
RAND OPERATING OVER BOTH PRIVATE AND DATAPHONE
LINES. (AUTHOR)

(U)

UNCLASSIFIED

A00396

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ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-645 294 9/2 12/2 5/1
CARNEGIE INST OF TECH PITTSBURG PA COMPUTATION CENTER
COMPUTER SCIENCE RESEARCH REVIEW. (U)
DESCRIPTIVE NOTE: ANNUAL REPT.,
66 73P NISSENSON, JOYCE I
CONTRACT: SD-146
MONITOR: AFOSR 67-0252

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS,
REVIEWS), MANAGEMENT ENGINEERING, GAME THEORY,
SIMULATION, ALGORITHMS, TIME SHARING,
COMPUTERS, DESIGN, PROBLEM SOLVING (U)
IDENTIFIERS: COMPUTATION SCIENCE, COMPUTATION
CENTERS (U)

CONTENTS: INTRODUCTION; MANAGING A
COMPUTATION CENTER BY DAVID H. NICKERSON;
DIRECTOR; ON THE REPRESENTATIONS OF PROBLEMS
BY DR. ALLEN NEWELL; THE SYNTHESIS OF
ALGORITHMIC SYSTEMS BY DR. ALAN J. PERLIS,
HEAD DEPARTMENT OF COMPUTER SCIENCE;
REFLECTIONS ON TIME SHARING FROM A USER'S
POINT OF VIEW BY DR. HERBERT SIMON, R. K.
MELLON PROFESSOR OF COMPUTER SCIENCES AND
PSYCHOLOGY; GENERALITY IN COMPUTER DESIGN BY
JESSE T. QUATSE, MANAGER, ENGINEERING
DEVELOPMENT; LISTING OF FACULTY; LISTING OF
GRADUATE STUDENTS; LISTING OF STAFF
ADMINISTRATORS; LISTING OF PUBLICATIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-647 196 5/2 9/2
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF
ELECTRICAL ENGINEERING
DESIGN PRINCIPLES FOR AN ON-LINE INFORMATION
RETRIEVAL SYSTEM. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
DEC 66 136P LOWE, THOMAS C. I
REPT. NO. 67-14
CONTRACT: AF 49(638)-1421, DA-31-124-AR(10)-362
PROJ: AF-9769
TASK: 976901
MONITOR: AFOSR 67-0423

UNCLASSIFIED REPORT

DESCRIPTORS: (+INFORMATION RETRIEVAL; DESIGN);
DECODING, COMPUTER STORAGE DEVICES, REAL TIME,
DATA, MAN-MACHINE SYSTEMS, DATA STORAGE SYSTEMS,
COMPUTER OPERATORS, TYPEWRITERS (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

AREAS INVESTIGATED INCLUDE SLOW MEMORY DATA
STORAGE, THE PROBLEM OF DECODING FROM AN INDEX TO A
SLOW MEMORY ADDRESS, THE STRUCTURE OF DATA LISTS AND
DATA LIST OPERATORS, COMMUNICATIONS BETWEEN THE HUMAN
USER AND THE SYSTEM, PROCESSING OF RETRIEVAL
REQUESTS, AND THE USER'S CONTROL OVER THE RETURN OF
INFORMATION RETRIEVED. LINEAR, LINKED AND INVERTED
FILE STRUCTURES ARE CONSIDERED. EMPIRICAL DATA
FROM THE REPOSITORY OF THE ASSOCIATION FOR
COMPUTING MACHINERY ARE USED FOR ILLUSTRATIVE
PURPOSES. THESE DATA ARE ALSO USED IN THE PORTION
OF THE DECODING MECHANISM STUDY WHICH DEALS WITH THE
EFFECTS OF TRUNCATION OF INDEX TERMS. FOLLOWING
THE FILE ORGANIZATION STUDY, THE NECESSARY LIST
STRUCTURES AND LIST OPERATORS ARE DESIGNED. AN
EDITING LANGUAGE FOR USE BY THE HUMAN OPERATOR IN
COMMUNICATING WITH THE SYSTEM IS SPECIFIED, AS ARE
REQUIREMENTS FOR THE EXECUTION OF 'BACKGROUND'
PROGRAMS WHEN A USER'S INFORMATION RETRIEVAL REQUEST
IS NOT BEING PROCESSED. FINALLY, A SIMPLE SEQUENCE
OF MAN-MACHINE COMMUNICATIONS WHICH ALLOW THE USER OF
THE SYSTEM TO SPECIFY WHAT CLASSES OF DATA ARE TO BE
RETURNED TO HIM IS OUTLINED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-649 147 9/2 12/1

CALIFORNIA UNIV LOS ANGELES DEPT OF ENGINEERING
THEORY OF QUEUES APPLIED TO TIME-SHARED COMPUTER
SYSTEMS.

(U)

66 12P KLEINROCK, LEONARD I

CONTRACT: AF-AFOSR-700-46

PROJ: AF-9749

TASK: 9749D1

MONITOR: AFOSR 67-0706

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN IEEE REGION SIX
CONFERENCE RECORD 1966.

DESCRIPTORS: (+TIME SHARING, +QUEUEING THEORY),
(+COMPUTERS, TIME SHARING), DATA PROCESSING
SYSTEMS, STOCHASTIC PROCESSES, MATHEMATICAL
MODELS, PROBABILITY, THEOREMS

(U)

TIME-SHARED COMPUTER (OR PROCESSING) FACILITIES
ARE TREATED AS STOCHASTIC QUEUEING SYSTEMS UNDER
PRIORITY SERVICE DISCIPLINES AND THE PERFORMANCE
MEASURE OF THESE SYSTEMS IS TAKEN TO BE THE AVERAGE
TIME SPENT IN THE SYSTEM. RESULTS ARE PRESENTED
FOR MODELS IN WHICH TIME-SHARED COMPUTER USAGE IS
OBTAINED BY GIVING EACH REQUEST A FIXED QUANTUM, q ,
OF TIME ON THE PROCESSOR, AFTER WHICH THE REQUEST IS
PLACED AT THE END OF A QUEUE OF OTHER REQUESTS. THE
QUEUE OF REQUESTS IS CONSTANTLY CYCLED, GIVING EACH
USER q SEC ON THE MACHINE PER CYCLE. RESULTS FOR
THE CASE FOR WHICH q APPROACHES LIMIT OF Q (A
PROCESSOR-SHARED MODEL) ARE THEN PRESENTED. A
GENERAL TIME-SHARED FACILITY IS THEN CONSIDERED IN
WHICH PRIORITY GROUPS ARE INTRODUCED.
SPECIFICALLY, THE $P(i)$ PRIORITY GROUP IS GIVEN
 q SUB P q SECONDS IN THE PROCESSOR EACH TIME
AROUND. LETTING q APPROACH LIMIT OF Q WE THEN
GET RESULTS FOR PRIORITY PROCESSOR-SHARED SYSTEM.
THESE DISCIPLINES ARE COMPARED TO THE FIRST COME
FIRST SERVED DISCIPLINES. THE SYSTEMS CONSIDERED
PROVIDE THE TWO BASIC FEATURES DESIRED IN ANY TIME-
SHARED SYSTEM, NAMELY, RAPID SERVICE FOR SHORT JOBS,
AND THE VIRTUAL APPEARANCE OF A (FRACTIONAL
CAPACITY) PROCESSOR AVAILABLE ON A FULL-TIME BASIS.
NO CHARGE IS MADE FOR SWAP TIME, THUS PROVIDING
RESULTS FOR 'IDEAL' SYSTEMS. THE RESULTS HOLD ONLY
FOR POISSON ARRIVALS AND GEOMETRIC (OR
EXPONENTIAL) SERVICE TIME DISTRIBUTIONS.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-650 500 4/4 9/2
RAND CORP SANTA MONICA CALIF
ON-LINE COMPUTER CLASSIFICATION OF HANDPRINTED
CHINESE CHARACTERS AS A TRANSLATION AID, (U)
APR 67 20P GROHER, G. F. THEAPNER, J.
F. ROBINSON, T. W. I
REPT. NO. P-3566

UNCLASSIFIED REPORT

DESCRIPTORS: (+CHARACTER RECOGNITION, +CHINESE
LANGUAGE), COMPUTERS, COMPUTER PROGRAMS,
PRINTING, CLASSIFICATION, CATHODE RAY TUBES,
PATTERN RECOGNITION, FEASIBILITY STUDIES, INPUT-
OUTPUT DEVICES (U)
IDENTIFIERS: ON-LINE SYSTEMS, WRITING (U)

IT IS USUALLY A LONG AND ARDUOUS TASK TO FIND
CHINESE CHARACTERS IN A DICTIONARY BECAUSE THE
CHARACTERS HAVE NO NATURAL ORDERING. IN ORDER TO
DEMONSTRATE THE FEASIBILITY OF AUTOMATING THIS
PROCEDURE, A COMPUTER PROGRAM WAS DEVELOPED FOR
CATALOGING AND RETRIEVING RELATED GROUPS OF CHINESE
CHARACTERS. THE PROGRAM IS WRITTEN IN IBM 360
ASSEMBLY LANGUAGE AND RUNS ON AN IBM 360/
MODEL 40. IT MAKES USE OF MUCH OF THE SOFTWARE
AND TECHNIQUES DEVELOPED FOR THE GRAIL PROJECT.
THE INPUT DEVICE IS A TABLET; THE OUTPUT DEVICE IS
A HIGH-PERFORMANCE CATHODE RAY TUBE (CRT) DISPLAY.
(AUTHOR) (U)

UNCLASSIFIED

A00394

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-650 847 9/2
RAND CORP SANTA MONICA CALIF
SYSTEM IMPLICATIONS OF INFORMATION PRIVACY, (U)
APR 67 43P PETERSEN, H. E. ITURN, R. I
REPT. NO. P-3504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT SPRING
JOINT COMPUTER CONFERENCE, ATLANTIC CITY, N.
J. 17-19 APR 1967.

DESCRIPTORS: (+COMPUTERS, CONTROL SYSTEMS),
TIME SHARING, REMOTE CONTROL SYSTEMS,
PROTECTION, COUNTERMEASURES, VULNERABILITY (U)

VARIOUS QUESTIONS OF PROVIDING INFORMATION PRIVACY
FOR REMOTELY ACCESSIBLE ON-LINE, TIME-SHARED
INFORMATION SYSTEMS ARE EXPLORED. SUCH SYSTEMS,
ESPECIALLY THE REMOTE TERMINALS AND THE COMMUNICATION
NETWORK, ARE VULNERABLE TO THREATS TO PRIVACY RANGING
FROM ACCIDENTAL DUMPING OF INFORMATION AS A RESULT OF
HARDWARE OR SOFTWARE FAILURES TO DELIBERATE
PENETRATION USING SOPHISTICATED EQUIPMENT.
DELIBERATE ATTACKS ARE TO BE EXPECTED SINCE PAYOFF
FROM OBTAINED, ALTERED, OR ERASED INFORMATION COULD
BE HIGH. THE RESOURCES REQUIRED VARY FROM THE COST
OF A TAPE RECORDER TO A LARGE INVESTMENT IN EQUIPMENT
AND KNOW-HOW. THE PROTECTIVE TECHNIQUES DISCUSSED
IN THIS PAPER INCLUDE: SHIELDING TO REDUCE ELECTRO-
MAGNETIC EMANATIONS; USE OF ONCE-ONLY PASSWORDS FOR
ACCESS CONTROL; APPLICATION OF PRIVACY
TRANSFORMATIONS TO CONCEAL INFORMATION IN USER-
PROCESSOR COMMUNICATIONS AND IN DATA FILES; RECORDING
OF ATTEMPTED PENETRATIONS; AND SYSTEMATIC
VERIFICATION OF THE HARDWARE AND SOFTWARE INTEGRITY.
IT APPEARS POSSIBLE TO ENGINEER VARIOUS PRIVACY
PROTECTION TECHNIQUES INTO INFORMATION SYSTEMS SO
THAT THE COST OF PROTECTION IS PROPORTIONAL TO THE
AMOUNT RECEIVED, AND IS BORNE LARGELY BY THOSE USERS
WHO DESIRE PRIVACY FOR THEIR COMMUNICATIONS AND/OR
FILES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-651 707 9/2

NAVAL RESEARCH LAB WASHINGTON D C
MULTIPROCESSOR OPERATING SYSTEMS;

(U)

APR 67 33P WALD, BRUCE I

REPT. NO. NRL-6531

PROJ: RF-001-08-41-4552

UNCLASSIFIED REPORT

DESCRIPTORS: (•TIME SHARING, STATE-OF-THE-ART
REVIEWS), (•DATA PROCESSING SYSTEMS,
OPTIMIZATION), (•MULTIPLE OPERATION,
COMPUTERS), PROGRAMMING(COMPUTERS),
HISTORY, MONTE CARLO METHOD, DIGITAL
COMPUTERS, THESES, SCHEDULING, BIBLIOGRAPHIES

(U)

IDENTIFIERS: MULTIPROCESSING,
MULTIPROGRAMMING

(U)

THE HISTORY AND PRESENT STATUS (1965) OF
MULTIPROCESSING, MULTIPROGRAMMING, AND TIMESHARING
ARE REVIEWED. IT IS CONCLUDED THAT, DESPITE THEIR
DIVERSE HISTORIES, THESE TECHNIQUES ARE DESTINED TO
BE INTERTWINED. ALTHOUGH THE MECHANICAL PROBLEMS
IN OPERATING SYSTEMS THAT EXPLOIT THESE TECHNIQUES
HAVE LARGELY BEEN SOLVED AND THE DIFFICULT MEMORY
ALLOCATION PROBLEM IS ON THE BRINK OF SOLUTION, THE
IMPORTANT QUESTION OF OPTIMUM OPERATING SYSTEM
STRATEGY IN INITIATING, SUSPENDING, AND TERMINATING
JOBS IS LARGELY UNEXPLORED. SUGGESTIONS ARE MADE
CONCERNING MODELS WHICH MIGHT BE SUITABLE FOR BOTH
ANALYTIC AND MONTE-CARLO APPROACHES TO THE
OPTIMIZATION OF OPERATING SYSTEM STRATEGY AND TO THE
SELECTION OF OPTIMUM HARDWARE MIXES. AN EXTENSIVE
BIBLIOGRAPHY IS INCLUDED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-653 142 9/2 17/2 5/1
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J
INTRODUCTION TO EXTENDED, TIME-SHARED PROCESSOR
SYSTEMS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 67 20P DUNN, ROBERT M. I
REPT. NO. ECOM-2806
PROJ: DA-1E6-20501-A485
TASK: 1E6-2501-A485-01

UNCLASSIFIED REPORT

DESCRIPTORS: (TIME SHARING, DATA PROCESSING
SYSTEMS), MOTIVATION, COMMUNICATION SYSTEMS,
DATA STORAGE SYSTEMS, MANAGEMENT PLANNING (U)
IDENTIFIERS: MULTIPROCESSING (U)

THE EXTENDED, TIME-SHARED PROCESSOR SYSTEM IS
MOTIVATED AND DEFINED. THE PURPOSE OF THE
DISCUSSION IS TO CHARACTERIZE AND EVALUATE THIS
CONCEPT. IN THE COURSE OF THE DISCUSSION, CURRENT
TIME-SHARED SYSTEMS, THEIR CHARACTERISTICS, SOME OF
THEIR TECHNICAL IMPLICATIONS, AND SOME OF THEIR
PROBLEMS ARE REVIEWED. THE REVIEW YIELDS
IMPLICATIONS AS TO THE ESSENTIAL CHARACTERISTICS OF
THE EXTENDED, TIME-SHARED PROCESSOR SYSTEM. THE
DISCUSSION ENDS WITH THE CONCLUSION THAT THE
EXTENDED, TIME-SHARED PROCESSOR SYSTEM IS A LIMITED
INSTANCE OF A MORE GENERALIZED SET OF ADAPTIVE,
PARALLEL PROCESSOR SYSTEMS WHICH SEEK TO
AUTOMATICALLY AND DYNAMICALLY DISTRIBUTE THEIR LOAD
THROUGHOUT THE PROCESSOR NETWORK. (AUTHOR) (U)

UNCLASSIFIED

A00396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-653 465 9/2 9/5 12/2
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF
ELECTRICAL ENGINEERING
THE INPUT/OUTPUT AND CONTROL SYSTEM OF THE MOORE
SCHOOL PROBLEM SOLVING FACILITY. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 67 150P MORTON, RICHARD P. ;
WOLFBERG, MICHAEL S. ;
REPT. NO. 67-30
CONTRACT: NONR-551(40)

UNCLASSIFIED REPORT

DESCRIPTORS: (+TELETYPE SYSTEMS, +INPUT-OUTPUT
DEVICES), (+PROBLEM SOLVING, DIGITAL
COMPUTERS), INFORMATION RETRIEVAL, REAL TIME,
INTERACTIONS, PROGRAMMING(COMPUTERS),
SCHEDULING, REMOTE CONTROL SYSTEMS, MANAGEMENT
ENGINEERING, COMPUTER PROGRAMS, CODING,
INSTRUCTION MANUALS, DOCUMENTATION,
BIBLIOGRAPHIES, GRAPHICS, PICTURES,
PROCESSING (U)

THE REPORT DOCUMENTS THE EFFORT WHICH HAS TO DATE
GONE INTO PROVIDING THE ON-LINE, REAL-TIME CAPABILITY
NEEDED FOR THE MOORE SCHOOL PROBLEM SOLVING
FACILITY. THE FACILITIES DESCRIBED ALLOW A USER AT
A REMOTE TERMINAL TO PREPARE INPUT, EXECUTE PROGRAMS
ON A COMPUTER AND EXAMINE HIS OUTPUT. THE PROGRAMS
DESCRIBED ARE RESPONSIBLE FOR CONTROLLING THIS
PROCESS BY TRANSMITTING AND BUFFERING THE DATA TO AND
FROM THE COMPUTER, TRANSLATING BETWEEN EXTERNAL AND
INTERNAL CODES, AND SCHEDULING THE COMPUTERS'
EFFORTS. (U)

UNCLASSIFIED

DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 624 9/2 5/1
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
EXPERIMENTAL INVESTIGATION OF USER PERFORMANCE IN
TIME-SHARED COMPUTING SYSTEMS: RETROSPECT, PROSPECT,
AND THE PUBLIC INTEREST. (U)
DESCRIPTIVE NOTE; PROFESSIONAL PAPER,
MAY 67 105P SACKMAN, H. I
REPT. NO. SP-2846
CONTRACT: F19628-67-C-0004

UNCLASSIFIED REPORT

DESCRIPTORS: (TIME SHARING, DATA PROCESSING
SYSTEMS), (DATA PROCESSING SYSTEMS,
PERFORMANCE(HUMAN)), MAN-MACHINE SYSTEMS,
MANAGEMENT PLANNING, PREDICTIONS, PROBLEM
SOLVING, REVIEWS, HUMAN ENGINEERING, REAL TIME,
STATISTICAL ANALYSIS (U)
IDENTIFIERS: EVALUATION, ON-LINE SYSTEMS, OFF-
LINE SYSTEMS (U)

THIS STUDY WAS CONDUCTED TO SURVEY THE FIELD OF
USER STUDIES IN TIME-SHARING, AND TO DEVELOP A
CONCEPTUAL FRAMEWORK FOR COOPERATIVE, LONG-RANGE
APPLIED RESEARCH IN THIS AREA--ULTIMATELY TO SERVE
THE PUBLIC INTEREST IN THE DEVELOPMENT OF THE
COMPUTER UTILITY. THE INTRODUCTION TRACES THE
HISTORICAL ROOTS OF USER PROBLEMS AND DEVELOPS THE
NEED FOR EXPERIMENTAL STUDIES OF USER PERFORMANCE IN
TIME-SHARING SYSTEMS. THE LITERATURE REVIEW
REVEALS A LARGE AND GROWING EXPERIMENTAL LAG BETWEEN
THE EXTENSION OF INFORMATION SERVICES AND VERIFIED
KNOWLEDGE OF USER PERFORMANCE. A CONCEPTUAL
FRAMEWORK FOR USER STUDIES IN TIME-SHARING IS
CONSTRUCTED FOLLOWING THREE BASIC STEPS. THE FIRST
DEFINES THIS FIELD OF INQUIRY. THE DEFINITION
ESSENTIALLY PORTRAYS THIS AREA AS EXPERIMENTALLY
DERIVED TECHNIQUES AND FINDINGS COMPRISING THE SHARED
AND VERIFIED EXPERIENCES OF THE USER COMMUNITY.
THE SECOND STEP BUILDS AN EVOLUTIONARY SYSTEMS
FRAMEWORK FOR USER STUDIES, ENCOMPASSING THE DESIGN,
DEVELOPMENT AND OPERATION OF USER SYSTEMS, AND
RELATING TIME-SHARED USER SYSTEMS TO OTHER TYPES OF
COMPUTER-AIDED SYSTEMS. THE LAST IS A
CLASSIFICATION OF USER PROBLEMS INTO FOUR BROAD
AREAS--METHODOLOGICAL, NORMATIVE, BEHAVIORAL, AND
SOCIAL EFFECTIVENESS. NUMEROUS PROBLEMS,
HYPOTHESES AND RECOMMENDATIONS FOR EXPERIMENTAL
INVESTIGATION OF USER PERFORMANCE ARE MADE FOR EACH
OF THESE FOUR CATEGORIES. THE STUDY CONCLUDES WITH
A PLEA FOR INTERDISCIPLINARY APPLIED RESEARCH TO MEE(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 678 9/2 15/7 17/2
RAND CORP SANTA MONICA CALIF
USE OF MULTIPLE ON-LINE, TIME-SHARED COMPUTER
CONSOLES IN SIMULATION AND GAMING,
JUN 67 63P NORTHROP, G. M. I
REPT. NO. P-3606

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT
SYMPOSIUM ON NATIONAL GAMING COUNCIL, WASHINGTON,
D. C. 8-9 JUN 1967.

DESCRIPTORS: (*WAR GAMES, SIMULATION), (*DATA
PROCESSING SYSTEMS, *SIMULATION), TIME SHARING,
CONTROL SYSTEMS, PROGRAMMING (COMPUTERS),
REAL TIME, COMMUNICATION SYSTEMS, PROGRAMMING
LANGUAGES

(U)

IDENTIFIERS: ON-LINE SYSTEMS, JOSS

(U)

SOME PRESENT-DAY ON-LINE, TIME-SHARED, MULTIPLE-
CONSOLE COMPUTER SYSTEMS PROVIDE FOR USE OF A COMMON
FILE SYSTEM. ONE CONSOLE CAN FILE A MESSAGE
(I.E., 'INFORMATION') WHICH CAN BE RECALLED BY
ANOTHER CONSOLE. BY PROGRAMMING CONSOLES TO
PERIODICALLY INTERROGATE CERTAIN FILES, A CRUDE, BUT
HIGHLY SERVICEABLE, STORE-AND-FORWARD COMMUNICATION
SYSTEM CAN BE CREATED AND LARGE NUMBERS OF ON-LINE,
TIME-SHARED COMPUTER CONSOLES CAN BE USED TO ENTER,
RECALL, PROCESS, AND DISPLAY INFORMATION TYPICAL OF
THAT USED IN COMMAND AND CONTROL SYSTEMS AND THE PLAY
OF GAMES. THE RAND CORPORATION'S JOSS SYSTEM
PROVIDES THE CAPABILITY DESCRIBED. IN ADDITION TO
ITS USE FOR THE SOLUTION OF SCIENTIFIC PROBLEMS, IT
IS PRESENTLY BEING EMPLOYED TO SIMULATE IN REAL TIME
ELEMENTS OF AN AUTOMATED TACTICAL AIR CONTROL SYSTEM
AND IN THE PLAY OF TACTICAL GAMES AND GAMES OF GLOBAL
STRATEGY. THE SIMPLE, EASY-TO-LEARN PROGRAMMING
LANGUAGE MAKES FEASIBLE CONSIDERABLE EXPERIMENTATION
WITH SCHEDULING ALGORITHMS, DECISION RULES, ETC.
THIS PAPER DESCRIBES THE BASIC FEATURES OF THE
USE OF MULTIPLE JOSS CONSOLES IN SIMULATION AND
GAMING AND DISCUSSES SOME OF THE ADVANTAGES,
LIMITATIONS, AND LESSONS LEARNED TO DATE.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AU0396

AD-654 749 9/2 17/2 5/2
COMRESS INC WASHINGTON D C
PROPOSED SYSTEM CONCEPT FOR REAL-TIME PROCESSING OF
AUTODIN MESSAGES. (U)
MAY 67 48P
CONTRACT: F19628-67-C-0259
MONITOR: ESO TR-67-294

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, REAL
TIME), (+INFORMATION RETRIEVAL, DATA
TRANSMISSION SYSTEMS), COMMAND + CONTROL
SYSTEMS, MAN-MACHINE SYSTEMS, DECISION MAKING (U)

THE REPORT IS THE PROPOSED SYSTEM CONCEPT FOR THE
REAL-TIME PROCESSING OF AUTODIN MESSAGES AT THE
DATA SERVICES CENTER, HQ USAF. THE
DESCRIPTION OF THE PRESENT SYSTEM EMPHASIZES THE
BATCH PROCESSING NATURE OF THE PRESENT COMPUTER
PROGRAMS, AND THEIR INTERRELATIONSHIPS WITH EACH
OTHER AND WITH THE MANUAL RCS CONTROL SYSTEM.
THE PROBLEMS THAT CHARACTERIZE THE PRESENT SYSTEM
ARE PRINCIPALLY THOSE OF THE TIME THAT ELAPSES
BETWEEN RECEIPT OF A MESSAGE ON THE AUTODIN
TERMINAL AND THE IDENTIFICATION OF ERRORS THAT
INVALIDATE THE MESSAGE AND REQUIRE FURTHER CONTACT
WITH THE ORIGINATOR. THE MANUAL RCS CONTROL FILE
WAS IDENTIFIED AS BEING ONE OF THE MAJOR ELEMENTS OF
THIS TIME LAPSE BECAUSE OF THE PERIODIC MANUAL
TRANSCRIPTION OF INCOMING MESSAGES TO HANDWRITTEN
CONTROL CARDS. THE PROPOSED SYSTEM EMPHASIZES THE
DESIRABILITY OF PERFORMING DATA EDITS IMMEDIATELY
UPON RECEIPT OF EACH MESSAGE AND THE INSTANTANEOUS
TRANSMISSION OF AN ERROR MESSAGE TO THE ORIGINATOR
WHEN THE INCOMING MESSAGE HAS FAILED A FORMAT EDIT.
THE REAL-TIME CONCEPT IS ALSO THE MAIN ELEMENT OF
MANAGEMENT CONTROL THROUGH THE COMMAND AND QUERY
TERMINAL THAT PROVIDES ON-LINE MANAGEMENT DECISION-
MAKING ABILITY WITHOUT SACRIFICING ANY OF THE
ADVANTAGES OF THE COMPUTER-CONTROLLED REAL-TIME
SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-655 380 9/2
CARNEGIE INST OF TECH PITTSBURGH PA
TIME SHARED COMPUTERS, (U)
MAY 67 95P BELL, C. GORDON I
CONTRACT: SD-146
PROJ: 9710, C154501R
MONITOR: AFOSH 67-1618

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, DATA PROCESSING
SYSTEMS), REAL TIME, AUTOMATION, SCHEDULING, (U)
ALGORITHMS, PROGRAMMING (COMPUTERS)
IDENTIFIERS: MULTIPROGRAMMING, COMPUTER HARDWARE, (U)
COMPUTER SOFTWARE (U)

TIME-SHARING IS DISCUSSED GENERALLY TO INCLUDE ANY APPLICATION OF A COMPUTER SYSTEM WHICH HAS SIMULTANEOUS USERS. THE DISCUSSION EMPHASIZES THE GENERAL PURPOSE TIME-SHARING, SINCE SPECIAL PURPOSE TIME-SHARING, 'REAL TIME', AND 'ON LINE' SYSTEMS ARE A SUBSET. 'GRACEFUL CREATION', OR THE 'BOOT STRAPPING' OF A SYSTEM, IS DESCRIBED IN WHICH NEWLY CREATED INDIVIDUAL USER PROCEDURES ARE IMMEDIATELY AVAILABLE TO THE WHOLE COMMUNITY OF USERS, AND THE SYSTEM EXPANDS IN AN OPEN-ENDED FASHION BECAUSE MANY USERS CONTRIBUTE TO THE FORMATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-665 642 9/2 14/5
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS
A GENERAL PURPOSE VIDEO INPUT DEVICE FOR A DIGITAL
COMPUTER. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 67 48P STROLLO, THEODORE R. I
TEITELMAN, WARREN I
REPT. NO. 08N-1537
CONTRACT: NONN-4758(00)
PROJ: RR-003-10-02

UNCLASSIFIED REPORT

DESCRIPTORS: (+INPUT-OUTPUT DEVICES, DIGITAL
COMPUTERS), (+CHARACTER RECOGNITION, DATA
PROCESSING SYSTEMS), REAL TIME, TIME SHARING,
PATTERN RECOGNITION, DATA STORAGE SYSTEMS,
CAMERAS (U)
IDENTIFIERS: IMAGE DISSECTOR CAMERA SYSTEM (U)

A GENERAL PURPOSE VIDEO INPUT DEVICE WAS ACQUIRED
AND INTERFACED TO A DIGITAL COMPUTER. TIME-SHARED
ACCESS TO THIS DEVICE WAS PROVIDED IN REAL-TIME.
THE DEVICE WAS THEN USED TO PROVIDE INPUT FOR A
HAND WRITTEN CHARACTER RECOGNITION SCHEME. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-455 978 5/10 9/2
WESTERN AUSTRALIA UNIV NEOLANDS DEPT OF PSYCHOLOGY
A COMPUTER-LINKED RUNWAY FOR REAL TIME
OPERATION, (U)
67 4P NICHOLLS, IAN G. I
CONTRACT: AF-AFOSR-948-45
PROJ: AF-9778
TASK: 977801
MONITOR: AFOSR 67-1751

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN PSYCHON SCI V7 N9
P319-20 1967.

DESCRIPTORS: (+PSYCHOMETRICS, DATA PROCESSING
SYSTEMS), (+TIME SHARING, EXPERIMENTAL
DESIGN), REAL TIME, COSTS, INPUT-OUTPUT
DEVICES, COMPUTER PROGRAMS, RATS, RUNWAYS,
VELOCITY, RELIABILITY (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE PAPER OUTLINES A SYSTEM FOR RECORDING THE
RUNNING TIMES OF RATS IN A STRAIGHT RUNWAY USING A
TIME-SHARED COMPUTER. A DESCRIPTION IS GIVEN OF
THE HARDWARE AND SOFTWARE USED, AND THE ADVANTAGES OF
THE SYSTEM ARE DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AU0396

AD-657 783 9/2 17/2
CARNEGIE INST OF TECH PITTSBURGH PA DEPT OF COMPUTER
SCIENCE
TOWARD ECONOMICAL REMOTE COMPUTER ACCESS, (U)
JUL 67 18P GOLD, MICHAEL M. I
SELWYN, LEE L. I
CONTRACT: SD-146, NONR-4102(01)
PROJ: AF-9710
MONITOR: AFOSR 67-2018

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTERS, +REMOTE CONTROL
SYSTEMS), (+TIME SHARING, ECONOMICS),
(+COMMUNICATION SYSTEMS, TIME SHARING), COSTS,
TELETYPE SYSTEMS, TELEPHONE COMMUNICATION SYSTEMS,
EFFICIENCY (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE COMMUNICATIONS SERVICES AVAILABLE TO A USER
REMOTELY ACCESSING A TIME-SHARED COMPUTER SYSTEM ARE
CONSIDERED IN LIGHT OF THE REQUIREMENTS OF SUCH
USAGE. WHILE TIME-SHARED SYSTEMS ARE DESIGNED TO
PROVIDE THE COMPUTER USER WITH THE OPPORTUNITY TO
WORK AT HIS MOST ADVANTAGEOUS SPEED AND INTERACT WITH
THE COMPUTER AT HIS CONVENIENCE, AVAILABLE
COMMUNICATIONS SERVICES HAVE NOT AS YET BEEN DESIGNED
FOR EFFICIENT AND ECONOMIC TIME-SHARING COMPUTER
USAGE. A PLAN IS SUGGESTED WHICH WOULD SHARE
COMMUNICATION FACILITIES AMONG MANY USERS; EACH USER
ACCESSING THE FACILITY FOR BRIEF PERIODS OF TIME.
ALTHOUGH PRESENT TECHNOLOGY WOULD ALLOW A GROUP OF
USERS TO CONSTRUCT A SHARED-CARRIER OPERATION BY
LEASING CONVENTIONAL CIRCUITS FROM THE COMMON
CARRIERS, IT IS SUGGESTED THAT THE COMMON CARRIERS
OFFER A SHARING SERVICE, CHARGING FOR COMMUNICATIONS
BY THE AMOUNT OF INFORMATION TRANSMITTED RATHER THAN
THE TIME THE CIRCUIT IS OPEN, UNLESS SUCH A SYSTEM
IS IMPLEMENTED, THE FULL ECONOMIC ADVANTAGES OF TIME-
SHARING CANNOT BE ATTAINED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-658 477 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
THE SDC TIME-SHARING SYSTEM REVISITED. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
AUG 67 30P SCHWARTZ, JULES I. I
WEISSMAN, CLARK I
REPT. NO. SP-2874

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE 1967 NATIONAL ACM
CONFERENCE, WASHINGTON, D. C., 29-31 AUGUST
1967.

DESCRIPTORS: (+TIME SHARING, REVIEWS), (+DATA
PROCESSING SYSTEMS, TIME SHARING), PREDICTIONS,
COMPUTER STORAGE DEVICES, INPUT-OUTPUT DEVICES,
PROGRAMMING LANGUAGES, MANAGEMENT PLANNING,
COSTS, FLOW CHARTING, MAGNETIC CORE STORAGE,
EFFICIENCY, MAINTENANCE (U)
IDENTIFIERS: ON-LINE SYSTEMS, LISP, LIST
PROCESSING (U)

THE SDC TIME-SHARING SYSTEM (TSS), WHICH
OPERATES ON AN IBM AN/FSQ-32 COMPUTER AT SYSTEM
DEVELOPMENT CORPORATION, SANTA MONICA, WAS
ORIGINALLY DESCRIBED IN A PAPER ENTITLED 'A
GENERAL-PURPOSE TIME-SHARING SYSTEM,'
PUBLISHED IN 1964. TSS HAS NOW BEEN IN OPERATIONAL
USE FOR FOUR YEARS, SERVING A LARGE AND VARIED
COMMUNITY OF LOCAL AND REMOTE USERS. THIS PAPER
DESCRIBES THE PRESENT CAPABILITIES OF TSS,
DISCUSSES THE CRITICAL PROBLEMS OF RESOURCE
MANAGEMENT (AND THE SOLUTIONS TO THOSE PROBLEMS
EMPLOYED IN TSS), AND REVIEWS THE AUTHORS' ORIGINAL
STATEMENTS REGARDING THE ADVANTAGES OF TIME-SHARING
FOR SUCH TASKS AS ON-LINE PROGRAMMING AND DEBUGGING.
THE TECHNIQUES FOR MANAGING CPU TIME, STORAGE
MEDIA, AND USER/SYSTEM INTERACTION ARE DESCRIBED IN
SOME DETAIL. AN ATTEMPT IS MADE TO POINT OUT THE
WEAK AS WELL AS THE STRONG POINTS OF TSS, AND TO
INDICATE SOME OF THE EFFECTS THAT SYSTEMS SUCH AS
TSS HAVE HAD UPON COMPUTING TECHNOLOGY.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 362 9/2

RAND CORP SANTA MONICA CALIF

JOSS: 20,000 HOURS AT THE CONSOLE--A STATISTICAL SUMMARY, (U)

AUG 67 43P BRYAN, G. E. I

REPT. NO. RM-5359-PH

CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, *INPUT-
OUTPUT DEVICES), MAN-MACHINE SYSTEMS, MONITORS,
TIME SHARING, PROBLEM SOLVING, INTERACTIONS,
SCHEDULING, COMPUTER STORAGE DEVICES,
TYPEWRITERS (U)

IDENTIFIERS: JOSS (U)

RESULTS OF THE FIRST YEAR OF JOSS OPERATION ON
THE DIGITAL EQUIPMENT CORPORATION PDP-6.
THE GATHERING OF DATA FOR REVENUE ACCOUNTING AND
FOR PRODUCING PERFORMANCE MEASURES OF THE JOSS
SYSTEM AND ITS USERS IS A MAJOR FUNCTION OF THE
MONITOR, THE SYSTEM'S SUPERVISORY UNIT. AS
GENERATED BY THE INSTRUMENTING PROGRAMS, STATISTICS
ON USAGE INDICATE THAT OVER 700 INDIVIDUALS MAKE USE
OF JOSS SERVICE. EVERY MONTH 400 DIFFERENT USERS
GENERATE OVER 200 SESSIONS EACH DAY. TYPICAL USER
SESSIONS LAST 45 MINUTES AND AVERAGE 4 MINUTES OF
COMPUTING TIME, ALTHOUGH 50 PERCENT LAST LESS THAN 7
SECONDS. DURING AN AVERAGE SESSION, 15,000 JOSS
STATEMENTS ARE EXECUTED, AND 68,000 ARITHMETIC
OPERATIONS ARE PERFORMED. JOSS USER REQUESTS ARE
SUBSTANTIALLY DIFFERENT FROM THOSE MADE ON OTHER
TIME-SHARED SYSTEMS: THERE ARE A RELATIVELY LARGE
NUMBER OF REQUESTS FOR SHORT AMOUNTS OF COMPUTING AND
A RELATIVELY SMALL NUMBER FOR A LARGE AMOUNT OF
COMPUTING. THE AMOUNT OF COMPUTING, HOWEVER, IS BY
NO MEANS TRIVIAL, AS SEEN FROM THE NUMBER OF
STATEMENTS AND ARITHMETIC OPERATIONS PERFORMED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 733 5/1
RAND CORP SANTA MONICA CALIF
DESIGN CONSIDERATIONS FOR CAMCOS, A COMPUTER-
ASSISTED MAINTENANCE PLANNING AND CONTROL SYSTEM; (U)
JUL 67 66P DREZNER, S. M. ;
VANHORN, R. L. ;
REPT. NO. RM-5255-PR
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAINTENANCE, *CONTROL SYSTEMS),
(*MANAGEMENT PLANNING, COMPUTERS), SCHEDULING,
REAL TIME, AIRCRAFT, MONITORS, MAINTENANCE
PERSONNEL, AIR FORCE, LOGISTICS, DATA STORAGE
SYSTEMS, INFORMATION RETRIEVAL, JOB ANALYSIS (U)

A DESCRIPTION IS PRESENTED OF CAMCOS, AN ON-LINE, REAL-TIME COMPUTER SYSTEM FOR AIR FORCE BASE-LEVEL MAINTENANCE PLANNING AND CONTROL ACTIVITIES. CAMCOS IS DESIGNED TO PROVIDE A HIGH-LEVEL CAPABILITY FOR CRITICAL MISSIONS AND ECONOMICAL PERFORMANCE DURING ROUTINE OPERATIONS. A MISSION GENERATOR HELPS TO SELECT AN AIRCRAFT TO FULFILL A SORTIE REQUEST, AND SENDS THE DISPATCH NOTICES TO READY IT FOR ITS MISSION. THE SYSTEM HANDLES PLANNING, SCHEDULING, DISPATCHING, AND CONTROL FOR FLIGHT-LINE, BENCH, AND PERIODIC MAINTENANCE ON A UNIFIED BASIS THAT RELATES MAINTENANCE TO OPERATIONAL REQUIREMENTS. THE CURRENT STATUS OF ALL RESOURCES, WORKLOAD, AND AIRCRAFT IS MAINTAINED IN THE SYSTEM. AN EVENT MONITOR FOLLOWS ALL FLIGHT-LINE JOBS AND OTHER CRITICAL TASKS, NOTIFYING THE APPROPRIATE MANAGER IF A DEPARTURE FROM PLAN OCCURS. JOB REQUIREMENTS FOR REPORTED MALFUNCTIONS AND OTHER PRIORITY WORKLOAD ARE MATCHED AGAINST RESOURCES, AND SCHEDULED TO MEET AIRCRAFT RECOVERY TARGETS. PERSONNEL IN MAINTENANCE SQUADRONS REPORT WORK REQUIREMENTS; EVENTS SUCH AS START OF JOB, END OF JOB, ETC.; AND CHANGES IN RESOURCE AVAILABILITY THROUGH THE CONTROL SYSTEM. THESE DATA ARE USED FOR PLANNING AND CONTROLLING THE MAINTENANCE ACTIVITY AND ARE SAVED BY THE SYSTEM FOR SUBSEQUENT ANALYSIS AND REPORTING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 734 9/2 5/9
RAND CORP SANTA MONICA CALIF
THE JOSS PRIMER, (U)
AUG 67 45P MARKS, S. L. (ARMERDING, G.
#. !
REPT. NO. RM-5220-PR
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPECIAL PURPOSE COMPUTERS, *DATA
PROCESSING SYSTEMS), (*INPUT-OUTPUT DEVICES,
*COMPUTER OPERATORS), TIME SHARING, MAN-
MACHINE SYSTEMS, INTERACTIONS, TYPEWRITERS,
TRAINING, INSTRUCTION MANUALS (U)

INTRODUCTION TO JOSS, RAND'S TIME-SHARED
COMPUTING SYSTEM, FOR THE BEGINNING USER WITH
EXAMPLES ILLUSTRATING THE SYSTEM'S BASIC ELEMENTS,
WHICH CAN EASILY BE LEARNED WITHOUT PROGRAMMING
EXPERIENCE. SEATED AT A MOBILE CONSOLE CONNECTED
TO A COMPUTER VIA TELEPHONE LINES, THE PRIMER
READER FOLLOWS THE INSTRUCTIONS STEP BY STEP,
DUPLICATING EXAMPLES, TRYING VARIATIONS, AND
OBSERVING RESULTS. HE TYPES COMMANDS IN IMPERATIVE
ENGLISH SENTENCES, INSTRUCTING JOSS TO PERFORM
PROCEDURES IN ARITHMETIC, ALGEBRA, TRIGONOMETRY, AND
LOGIC. JOSS RESPONDS WITH ANSWERS IN USER-
PRESCRIBED FORMATS AND WITH ERROR MESSAGES THAT HELP
THE USER CORRECT ERRORS AND RESUME PROCESSING. TO
EXTEND THE BEGINNER'S KNOWLEDGE OF JOSS, THE
PRIMER CONCLUDES WITH LISTS OF JOSS COMMANDS AND
FUNCTIONS AND SUGGESTED READING IN THE JOSS
LITERATURE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 810 12/2 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH
CENTER
OPERATIONAL ANALYSIS OF A COMPUTATION CENTER. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 67 90P RAYNAUD, THIERRY GABRIEL I
REPT. NO. TR-32
CONTRACT: DA-31-124-ARO(D)-209, NONR-3963(D6)
PROJ: DA-2001501B704, DSR-75217
MONITOR: AROD 948:47-M

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: MASTER'S THESIS.

DESCRIPTORS: (*OPERATIONS RESEARCH, *DIGITAL
COMPUTERS), (*TIME SHARING, *REAL TIME),
THESES, DATA PROCESSING SYSTEMS, FLOW CHARTING,
EFFICIENCY, COSTS, SIMULATION, MANAGEMENT
ENGINEERING (U)

THE REPORT PRESENTS A PICTURE OF THE M. I. T.
COMPUTATION CENTER WITH EMPHASIS UPON PRESENT
PERFORMANCE AND ITS SUPERVISION. THE ACTUAL
CONFIGURATION IS ASSUMED. AFTER A PRESENTATION OF
THE ORGANIZATIONAL FRAMEWORK, OTHER BATCH-PROCESSING
OPERATIONS ARE BRIEFLY DISCUSSED (AS A SUMMARY OF
MANY DIRECT OBSERVATIONS OF THE GENERAL OPERATION OF
THE CENTER). A DETAILED ANALYSIS OF CERTAIN
VARIABLES IS MADE FROM DATA ON TIME-SHARING
OPERATIONS: SYSTEM PARAMETERS; GRADE OF SERVICE;
AND USER'S BEHAVIOR. SIMULATION IS USED TO GET
FURTHER KNOWLEDGE OF THE DYNAMIC BEHAVIOR. THREE
MODELS ARE PRESENTED AND THEY USE AS INPUT THE
RESULTS OF THE OBSERVATIONS REPORTED IN THE PREVIOUS
PARTS. THE MODELS REPRESENT THREE DIFFERENT
STANDPOINTS: REAL-TIME DECISIONS (REACTION TO
OVERLOAD CONDITIONS); DAY-TO-DAY OPERATIONS
(RULES FOR BALANCING THE BATCH-PROCESSING LOAD AND
THE TIME-SHARING LOAD); LONG-TERM STUDY (SEVERAL
MANAGEMENT ATTITUDES FOR THE NEXT SIX MONTHS INTERIM
PERIOD ARE STUDIED). (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-660 836 9/2

RAND CORP SANTA MONICA CALIF

JOSS; ASSEMBLY LISTING OF THE SUPERVISOR, (U)

AUG 67 188P BRYAN, G. E. I

REPT. NO. RM-5437-PR

CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (•TIME SHARING, DATA PROCESSING
SYSTEMS), (•CONTROL SYSTEMS, DATA PROCESSING
SYSTEMS), SCHEDULING, DIGITAL COMPUTERS,
CODING, MAN-MACHINE SYSTEMS, INPUT-OUTPUT
DEVICES, DATA STORAGE SYSTEMS, REAL TIME (U)

IDENTIFIERS: JOSS, ON-LINE SYSTEMS, MAGNETIC
DRUM STORAGE (U)

THE REPORT GIVES A PRESENTATION OF THE CODE FOR THE
MONITOR (SUPERVISOR) UNIT OF JOSS, RAND'S ON-
LINE, TIME-SHARED COMPUTER SYSTEM. THIS UNIT,
WHICH ACTS AS A SCHEDULING, RESOURCE-ALLOCATING, AND
SYNCHRONIZING DEVICE, EXERCISES OVERALL CONTROL OF
THE SYSTEM'S OPERATION. IT ENSURES THAT ALL DATA
AND HARDWARE NECESSARY FOR A PARTICULAR ACTION ARE
SIMULTANEOUSLY AVAILABLE, AND METERS THE OPERATION OF
THE SYSTEM TO PROVIDE REVENUE ACCOUNTING INFORMATION
AND DATA DESCRIBING SYSTEM PERFORMANCE AND USER
OPERATIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 604 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TRACE--MODEL II USER'S GUIDE, TIMESHARED ROUTINES FOR
ANALYSIS, CLASSIFICATION AND EVALUATION, (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
OCT 67 190P ESADA, RICHARD P. I
REPT. NO. TM-2621/003/00
CONTRACT: DAMC15-67-C-0277

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTER PROGRAMS, INSTRUCTION
MANUALS), (+TIME SHARING, DATA PROCESSING
SYSTEMS), PROGRAMMING LANGUAGES, SUBROUTINES,
PROBLEM SOLVING, MAN-MACHINE SYSTEMS (U)
IDENTIFIERS: ON-LINE SYSTEMS, TRACE, JOVIAL (U)

THE DOCUMENT PRESENTS A USER'S DESCRIPTION OF THE
TRACE SYSTEM, WHICH PROVIDES AN ON-LINE TECHNIQUE
FOR SCANNING DATA AND DERIVING VARIABLES. IT IS
DIVIDED INTO TWO MAIN SECTIONS: THE FIRST A
TUTORIAL GUIDE INTRODUCING THE USER TO THE BASIC
PRINCIPLES OF THE SYSTEM, AND THE SECOND A REFERENCE
GUIDE TO THE ENTIRE BODY OF THE TRACE PROGRAM.
THE USER IS SHOWN HOW TO INITIATE AN INTERACTION
WITH THE TIME-SHARING SYSTEM, HOW TO EMPLOY EVERY
CAPABILITY OF TRACE, WHAT ERRORS MAY BE EXPECTED IN
OPERATION, AND WHAT STATISTICAL PRODUCTS MAY BE
DERIVED THROUGH USE OF THE PROGRAM. A COMPLETE
INDEX ALLOWS THE USER TO REFER READILY TO ANY PORTION
OF THE DOCUMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 665 9/2

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
TIME-SHARING VERSUS BATCH PROCESSING: THE
EXPERIMENTAL EVIDENCE.

(U)

DESCRIPTIVE NOTE; PROFESSIONAL PAPER,

OCT 67 43P SACKMAN, H. I

REPT. NO. SP-2775

UNCLASSIFIED REPORT

DESCRIPTORS: (TIME SHARING,
PERFORMANCE(ENGINEERING)), DATA PROCESSING
SYSTEMS, MAN-MACHINE SYSTEMS, EFFICIENCY, COST
EFFECTIVENESS, MOTIVATION, REVIEWS

(U)

IDENTIFIERS: ON-LINE SYSTEMS, OFF-LINE SYSTEMS,
BATCH PROCESSING, EVALUATION

(U)

THE CONTINUING CONTROVERSY OVER THE RELATIVE MERITS
OF TIME-SHARING VERSUS BATCH PROCESSING HAS TAKEN A
NEW AND SIGNIFICANT TURN FROM PREDISCIPLINARY
SPECULATION TO APPLIED SCIENTIFIC EXPERIMENTATION.
WITHIN THE LAST TWO YEARS, FIVE EXPERIMENTAL
STUDIES HAVE APPEARED IN THE LITERATURE, EACH
COMPARING SOME FORM OF ONLINE AND OFFLINE DATA
PROCESSING WITH RESPECT TO MAN-MACHINE MEASURES OF
SYSTEM PERFORMANCE. THESE FIVE PIONEERING STUDIES
COMPRISE THE FIRST SUBSTANTIVE DATA BASE FOR
COMPARING AND EVALUATING EXPERIMENTAL METHODOLOGY AND
FINDINGS BEARING ON THE GROWING AND CHANGING
COMPETITION BETWEEN TIME-SHARING AND BATCH PROCESSING
SYSTEMS. THIS PAPER PROVIDES A CRITICAL REVIEW OF
THESE FIVE EXPERIMENTS, SUMMARIZED FINDINGS, PROBLEMS
AND PITFALLS, AND OFFERS RECOMMENDATIONS FOR FUTURE
EXPERIMENTAL WORK. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 751 9/2 6/3
CALIFORNIA UNIV LOS ANGELES BRAIN RESEARCH INST
A USER-ORIENTED TIME-SHARED ONLINE SYSTEM. (U)
DESCRIPTIVE NOTE: REVISED ED.,
FEB 67 7P BETYAR, LASZLO I
CONTRACT: NONR-233(91), PHS-NB-02501-05

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN COMMUNICATIONS OF THE
ACH V10 N7 P413-9 1967.
SUPPLEMENTARY NOTE: REVISION OF MANUSCRIPT RECEIVED JUL
66. RESEARCH SUPPORTED IN PART BY NASA, GRANT
NSG-505.

DESCRIPTORS: (+TIME SHARING, DATA PROCESSING
SYSTEMS), (+DIGITAL COMPUTERS, +BIOLOGY),
ANALOG-TO-DIGITAL CONVERTERS, INPUT-OUTPUT
DEVICES, PROGRAMMING LANGUAGES, MAN-MACHINE
SYSTEMS, DATA STORAGE SYSTEMS (U)
IDENTIFIERS: LIST PROCESSING, ON-LINE SYSTEMS,
MULTIPROCESSING (U)

AN EXISTING SYSTEM AND PLANNED ADDITIONS WITHIN THE
DATA PROCESSING LABORATORY OF THE BRAIN
RESEARCH INSTITUTE AT UCLA IS DESCRIBED. THE
SYSTEM REPRESENTS AN ATTEMPT TO PROVIDE RESEARCH
WORKERS OF THE INSTITUTE WITH THE ABILITY TO
INTERACT DIRECTLY WITH A HIGHLY SOPHISTICATED DIGITAL
COMPUTING COMPLEX IN THE MOST DIRECT AND SIMPLE
FASHION POSSIBLE. IT IS ANTICIPATED THAT, WITH THE
ACCUMULATION OF EXPERIENCE USING THE PRESENT SYSTEM,
SIGNIFICANT ADVANCES WILL BE POSSIBLE IN THE SYSTEM
DESIGN THROUGH DETERMINATION OF INTERFACE PARAMETERS
BETWEEN THE BIOLOGICAL SCIENTIST AND THE DIGITAL
COMPUTER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-641 807 9/2 5/9
MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF CIVIL
ENGINEERING
USE OF CTSS IN A TEACHING ENVIRONMENT, (U)
NOV 64 35P ROOS, DANIEL I
REPT. NO. MAC-TR-14
CONTRACT: NONR-4102(01)
PROJ: NR-048-189, RR-003-09-01

UNCLASSIFIED REPORT

DESCRIPTORS: (•TIME SHARING, •TEACHING
MACHINES), (•TEACHING METHODS, COMPUTERS),
RELIABILITY, REAL TIME, STUDENTS, MOTIVATION,
INPUT-OUTPUT DEVICES, (U)
PROGRAMMING (COMPUTERS)
IDENTIFIERS: MAC PROJECT, ON-LINE SYSTEMS,
BATCH PROCESSING, COMPUTER-AIDED INSTRUCTION, (U)
COMPATIBLE TIME-SHARING SYSTEM

COMPUTER TIME-SHARING OFFERS MANY INTERESTING
POSSIBILITIES FOR USE IN TEACHING COMPUTER
TECHNOLOGY. IT MIGHT BE EXPECTED THAT WITH PROPER
HARDWARE AND SOFTWARE, STUDENTS USING TIME-SHARING AS
A TEACHING MACHINE COULD ACQUIRE PROFICIENCY IN THE
FUNDAMENTALS OF PROGRAMMING MORE EASILY THAN USING
BATCH-PROCESSING. TO TEST THIS HYPOTHESIS, THE
M.I.T. DEPARTMENT OF CIVIL ENGINEERING
DIVIDED A FRESHMAN PROGRAMMING CLASS, SO THAT HALF
THE STUDENTS USED BATCH-PROCESSING METHODS, AND HALF
USED THE PROJECT MAC TIME-SHARING SYSTEM TO DO
THE SAME WORK. THE PAPER DESCRIBES THE EXPERIMENT
AND ITS TENTATIVE RESULTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 861 9/2 5/1
TRACOR INC AUSTIN TEX
DATA MANAGEMENT: A COMPARISON OF SYSTEM
FEATURES,
OCT 67 4JP ZIEHE, THEODORE W. I
REPT. NO. TRACOR-67-904-U
CONTRACT: N00014-67-C-0396
PROJ: NR-048-239, 007-001-01

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS,
MANAGEMENT PLANNING), MAN-MACHINE SYSTEMS,
TIME SHARING, INDEXES, DOCUMENTATION,
INFORMATION RETRIEVAL, DESIGN
IDENTIFIERS: DATA MANAGEMENT, ON-LINE SYSTEMS

(U)

(U)

FEATURES OF FOUR DATA MANAGEMENT SYSTEMS UNDER
DEVELOPMENT ARE COMPARED. THE FOUR SYSTEMS ARE THE
TIME-SHARED DATA MANAGEMENT SYSTEM
(SYSTEM DEVELOPMENT CORPORATION) AND A
VARIANT OF IT, THE REMOTE FILE MANAGEMENT
SYSTEM (COMPUTATION CENTER, THE UNIVERSITY
OF TEXAS); DATA MANAGER - I (AUERBACH
CORPORATION); THE GENERALIZED INFORMATION
SYSTEM (IBM); AND THE CATALOG SYSTEM (THE
RAND CORPORATION). COMPARISONS ARE DRAWN IN
TWO AREAS: EXTERNAL AND INTERNAL DATA STRUCTURING
AND ORGANIZATION. SEVERAL DIFFERENCES AMONG THE
SYSTEMS ARE NOTED AND BRIEFLY DISCUSSED.
(AUTHOR)

(U)

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DDC REPORT BIBL. GRAPHY SEARCH CONTROL NO. A00396

AD-661 966 5/2 5/7 9/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
AN APPROACH TO THE ON-LINE INTERROGATION OF
STRUCTURED FILES OF FACTS USING NATURAL LANGUAGE. (U)
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
APR 66 88P KELLOGG, CHARLES H. I
REPT. NO. SP-2431/000/00
CONTRACT: AF 19(628)-5166, ARPA ORDER-773

UNCLASSIFIED REPORT

DESCRIPTORS: (+INFORMATION RETRIEVAL,
+GRAMMARS), (+DATA PROCESSING SYSTEMS,
PROGRAMMING(COMPUTERS)), (+MAN-MACHINE
SYSTEMS, GRAMMARS), TIME SHARING, SYNTAX,
PROBLEM SOLVING, ALGORITHMS, SEMANTICS (U)
IDENTIFIERS: DATA MANAGEMENT, ON-LINE SYSTEMS (U)

THE ADVENT OF TIME-SHARED COMPUTER SYSTEMS PRESENTS
THE COMPUTING COMMUNITY WITH THE NEW AND CHALLENGING
OPPORTUNITY OF PROVIDING USERS WITH MORE POWERFUL AND
EFFECTIVE TOOLS FOR PROBLEM SOLVING. FOR EXAMPLE,
HAVING FACILITIES FOR RAPIDLY ACCESSING LARGE FILES
OF STORED INFORMATION IMPLIES A CONCOMITANT NEED FOR
DEVELOPING BETTER METHODS FOR INTERROGATING THE
CONTENT OF THESE FILES. USER/COMPUTER INTERACTION
IN FORMULATING PROBLEMS DEPENDS ON SUCH IMPROVEMENTS
IN COMMUNICATION EFFECTIVENESS AND, CONSEQUENTLY, THE
COOPERATIVE PROBLEM SOLVING VENTURE ITSELF. ON-
LINE INTERROGATION OF STRUCTURED FILES IS VALUABLE
ONLY IN PROPORTION TO A USER'S ABILITY TO GET AT SETS
OF RELEVANT FACTS, TO PERCEIVE PERTINENT
RELATIONSHIPS AMONG THESE FACTS, AND TO MANIPULATE,
REARRANGE, AND COMBINE THEM AS REQUIRED BY THE TASK
AT HAND. THIS PAPER IS CONCERNED WITH DEVELOPMENT
OF AN APPROACH AND IMPLEMENTATION OF A VEHICLE TO
ENABLE USERS TO FORMULATE REQUESTS MORE CONVENIENTLY
AND TO GAIN ACCESS TO RELEVANT FACTS. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 983 9/2 14/1
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
AN ANALYTICAL COST COMPARISON OF COMPUTER OPERATING
SYSTEMS. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JUN 67 213P ERIKSON, WARREN J. I
REPT. NO. TM-3525
CONTRACT: F19628-67-C-0004

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA PROCESSING SYSTEMS,
PERFORMANCE(ENGINEERING)), (+TIME SHARING,
PERFORMANCE(ENGINEERING)), (+COST
EFFECTIVENESS, DATA PROCESSING SYSTEMS),
MANAGEMENT PLANNING, DECISION MAKING,
OPTIMIZATION, MATHEMATICAL MODELS, MAINTENANCE,
PROGRAMMING(COMPUTERS) (U)
IDENTIFIERS: BATCH PROCESSING (U)

THE REPORT ATTEMPTS TO ANSWER SOME OF THE QUESTIONS
CONCERNING THE ADVANTAGES AND DISADVANTAGES OF TIME-
SHARING. TO ACCOMPLISH THIS, THE GENERAL PROBLEM
OF EVALUATING COMPUTER SYSTEM PERFORMANCE IS FIRST
ADDRESSED. GENERAL SYSTEM CHARACTERISTICS ARE
SPECIFIED THAT INCLUDE THE COMPUTER AND ITS OPERATING
SYSTEM, AND USERS AND THEIR JOBS. THE MAIN
EMPHASIS IS PLACED UPON THE OPERATING SYSTEM. THE
EFFECTS OF HAVING DIFFERENT COMPUTERS, USERS, OR JOBS
ARE TREATED AS PARAMETERS. THE MOST IMPORTANT
EVALUATION CRITERION IS CONSIDERED TO BE COST, WHICH
INCLUDES BOTH USER COST AND COMPUTER SYSTEM COST.
QUANTITATIVE MODELS ARE DEVELOPED THAT DESCRIBE
COMPUTER CENTER USERS, THE PROGRAMS THEY RUN, AND THE
DIFFERENT OPERATING SYSTEMS THEY MIGHT USE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-662 027 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
A LOW-COST OUTPUT TERMINAL FOR TIME-SHARED
COMPUTERS.
DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAR 67 SIP ROSENBERG, RONALD C. I
KENNEDY, DANIEL W. HUMPHREY, ROGER A. I
REPT. NO. MAC-TR-38
CONTRACT: NONR-4102(01)
PROJ: NR-048-189

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (TIME SHARING, INPUT-OUTPUT
DEVICES), (REMOTE CONTROL SYSTEMS, TIME
SHARING), DIGITAL COMPUTERS, REAL TIME,
COMMUNICATION SYSTEMS, ANALOG SYSTEMS, DISPLAY
SYSTEMS, DATA STORAGE SYSTEMS, WIRING
DIAGRAMS
IDENTIFIERS: ON-LINE SYSTEMS

(U)

(U)

A LOW COST REMOTE TERMINAL WHICH PROVIDES OUTPUT IN
SWITCH FORM FROM A TIME-SHARED DIGITAL COMPUTER IS
DESCRIBED. THE TERMINAL CONSISTS OF A MODIFIED
MODEL 35 KSR TELETYPE AND A LOCAL MEMORY UNIT.
THE UNIT IS INDEPENDENT OF THE PARTICULAR COMPUTER,
AND IS EASY TO TEST AND MAINTAIN. THE STATES OF
THE MEMORY CONTROL AND MEMORY WORDS ARE OBSERVABLE
DIRECTLY BY INDICATOR LIGHTS. AN APPLICATION OF
THE MEMORY TO THE AUTOMATIC SET-UP AND CONTROL OF AN
ANALOG COMPUTATION ARE DISPLAYED ON AN OSCILLOSCOPE;
THIS MAKES POSSIBLE, FOR EXAMPLE, THE RAPID DISPLAY
OF TIME RESPONSE OF LINEAR SYSTEMS, UNDER DIGITAL
PROGRAM CONTROL. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-662 225 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE
INCREMENTAL SIMULATION ON A TIME-SHARED
COMPUTER.
DESCRIPTIVE NOTE: DOCTORAL THESIS,
67 253P JONES, MALCOLM M. 1
REF. NO. MAC-TR-48
CONTRACT: NONR-4102(01)
PROJ: MR-048-189, RR-003-09-01

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*TIME SHARING, COMPUTERS),
(*SIMULATION, COMPUTERS), PROGRAMMING
LANGUAGES: REAL TIME, THESES, DISPLAY SYSTEMS
IDENTIFIERS: ON-LINE SYSTEMS, LIST PROCESSING

(U)

(U)

THE THESIS DESCRIBES A SYSTEM WHICH ALLOWS
SIMULATION MODELS TO BE BUILT AND TESTED
INCREMENTALLY. IT IS CALLED OPS-4 AND IS
SPECIFICALLY DESIGNED TO OPERATE IN THE ENVIRONMENT
OF THE MULTICS SYSTEM. IT REPRESENTS A MAJOR
EXPANSION AND IMPROVEMENT OF THE OPS-3 SYSTEM
IMPLEMENTED IN CTSS AND ALSO INCLUDES MANY FEATURES
ADAPTED FROM OTHER CURRENT SIMULATION SYSTEMS. THE
PL/I LANGUAGE, AUGMENTED BY MANY ADDITIONAL
STATEMENTS AND NEW DATA OBJECTS, PROVIDES THE BASIS
FOR DEFINING MODELS IN OPS-4. A LIST OF
DESIRABLE FEATURES FOR AN INCREMENTAL SIMULATION
SYSTEM IS PRESENTED AND IT IS SHOWN HOW OPS-4
INCORPORATES THESE FEATURES, WHEREAS OTHER CURRENT
SIMULATION SYSTEMS SATISFY ONLY SOME OF THEM AND ARE
NOT SUITABLE FOR USE IN TIME-SHARED ENVIRONMENT. A
SIMPLIFIED MODEL OF PAGE AND SEGMENT FAULT HANDLING
IN MULTICS ILLUSTRATES SOME OF THE FEATURES OPS-4
PROVIDES TO ALLOW THE USER TO CONTINUOUSLY INTERACT
WITH A MODEL DURING ITS CONSTRUCTION, TESTING AND
RUNNING PHASES. IT ALSO ILLUSTRATES HOW THE USER
HIMSELF MAY PORTRAY PORTIONS OF A MODEL THAT ARE NOT
YET DEFINED. (AUTHOR)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-663 198 9/2 5/11 5/8
MASSACHUSETTS INST OF TECH CAMBRIDGE
THE COMPUTER UTILITY AND THE COMMUNITY.
67 9P FAND, R. M. I
CONTRACT: NONR-4102(01)

(U)

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN IEEE INTERNATIONAL
CONVENTION RECORD, PT. 12 P30-7 1967.
SUPPLEMENTARY NOTE: REPORT ON PROJECT MAC.

DESCRIPTORS: (*COMPUTERS, *SOCIOLOGY), (*TIME
SHARING, STATE-OF-THE-ART REVIEWS),
PROGRAMMING(COMPUTERS), MAN-MACHINE SYSTEMS,
COSTS, MANAGEMENT PLANNING, DATA PROCESSING
SYSTEMS

(U)

IDENTIFIERS: COMPATIBLE TIME-SHARING SYSTEM, MAC
PROJECT, PRIVACY

(U)

THE REPORT CONSIDERS THE FOLLOWING TERMS:
(1) THE STATE OF THE ART IN TIME SHARING;
(2) COMPUTERS AS ASSISTANTS TO THE INDIVIDUAL
AND, (3) SOCIAL IMPLICATIONS.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-663 525 9/5 9/2
MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF
ELECTRONICS
A PROGRAM FOR ON-LINE ANALYSIS OF NONLINEAR
ELECTRONIC CIRCUITS, (U)
67 6P KATZENELSON, JACOB ;
EVANS, DAVID S. ILEE, HARRY B. ;
CONTRACT: DA-36-039-AMC-03200(E), NSG-496
PROJ: DSR-6152, DSR-9442

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN IEEE INTERNATIONAL
CONVENTION RECORD PT. 5 P89-94 1967.
SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY AIR
FORCE, ARPA, AND NONR.

DESCRIPTORS: (*ELECTRICAL NETWORKS, ANALYSIS);
DATA PROCESSING SYSTEMS, TIME SHARING, COSTS,
NONLINEAR SYSTEMS, REMOTE CONTROL SYSTEMS,
PROGRAMMING (COMPUTERS), DISPLAY SYSTEMS,
INPUT-OUTPUT DEVICES (U)
IDENTIFIERS: COMPATIBLE TIME-SHARING SYSTEM, ON-
LINE SYSTEMS, AEDNET, BATCH PROCESSING (U)

USERS HAVE FOUND THAT AEDNET PROGRAM TO BE
ATTRACTIVE BECAUSE OF THE EASE WITH WHICH IT CAN BE
USED, THE SPEED OF RESPONSE, AND THE FACT THAT A USER
NEED NOT SPECIFY THE COURSE OF HIS ANALYSIS AT THE
OUTSET. THE COST OF TERMINAL HARDWARE AND PROGRAM
DEVELOPMENT PRESENTLY IS HIGH. HOWEVER, COSTS
SHOULD BE GREATLY REDUCED WHEN ON-LINE COMPUTATIONAL
FACILITIES BECOME COMMERCIALY AVAILABLE AND USERS
COOPERATE IN PROGRAM DEVELOPMENT. THUS IT APPEARS
LIKELY THAT ON-LINE CIRCUIT ANALYSIS PROGRAMS WILL
FIND EXTENSIVE USE IN BOTH INDUSTRY AND EDUCATION.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-664 039 15/5 7/2
RAND CORP SANTA MONICA CALIF
COMBAT -- A SERIES OF ON-LINE COMPUTER PROGRAMS FOR
FORCE COST ANALYSIS, (U)
DEC 67 28P TENG, C. ITENZER, A. J. I
REPT. NO. P-3646

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE 1967 COMPUTER
SUMMER WORKSHOP SPONSORED BY THE INDUSTRIAL COLLEGE
OF THE ARMED FORCES AND THE UNITED STATES MILITARY
ACADEMY, WEST POINT, N. Y., JUL 20 1967.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, ARMED
FORCES OPERATIONS), (+ARMED FORCES OPERATIONS,
COST EFFECTIVENESS), COSTS, COMPUTER PROGRAMS,
DATA PROCESSING SYSTEMS, MILITARY REQUIREMENTS,
DECISION MAKING, EFFECTIVENESS, MATHEMATICAL
MODELS, ITERATIVE METHODS (U)
IDENTIFIERS: ON-LINE SYSTEMS, COMBAT(COST
ORIENTED MODELS BUILT TO ANALYZE TRADE-
OFFS), TRADE OFFS (U)

THE REPORT DESCRIBES A NEW FORCE STRUCTURE COST-
ESTIMATING MODEL CALLED COMBAT. IT IS PROGRAMMED
FOR AN ON-LINE COMPUTER SYSTEM, AND DESIGNED WITH THE
WAR GAMING ACTIVITY IN MIND. COMBAT STANDS FOR
COST ORIENTED MODELS BUILT TO ANALYZE TRADE-OFFS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-664 673 7/2 17/2
MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS
LAB
A LOW-COST GRAPHIC DISPLAY FOR A COMPUTER TIME-
SHARING CONSOLE. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JUL 67 32P STOTZ, ROBERT H. I
CHEEK, THOMAS B. I
REPT. NO. ESL-TM-316
CONTRACT: NONR-4102(01)
PROJ: DSR-79474

UNCLASSIFIED REPORT

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, *TIME
SHARING), (*INPUT-OUTPUT DEVICES, REMOTE CONTROL
SYSTEMS), (*GRAPHICS, DISPLAY SYSTEMS),
TELETYPE SYSTEMS, TYPEWRITERS, SYMBOLS,
EFFICIENCY, COSTS, DATA TRANSMISSION SYSTEMS,
TELEPHONE COMMUNICATION SYSTEMS, DATA STORAGE
SYSTEMS, LOGIC CIRCUITS, MAN-MACHINE SYSTEMS (U)
IDENTIFIERS: ALPHA-NUMERIC SYMBOLS, KEYBOARDS,
MAC PROJECT, TELETYPEWRITERS (U)

THE ADVENT OF TIME-SHARED COMPUTER SYSTEMS HAS
CREATED A NEED FOR A FLEXIBLE AND RELATIVELY LOW-COST
COMMUNICATION TERMINAL FOR REMOTE COMPUTER ACCESS.
MOST TIME-SHARED SYSTEMS NOW USE MECHANICAL
TELETYPEWRITERS WHICH ARE SLOW AND UNABLE TO PRESENT
GRAPHIC DISPLAYS--A SERIOUS LIMITATION IN MANY
SOPHISTICATED COMPUTER APPLICATIONS. THE BEST
CANDIDATE FOR A TELETYPEWRITER REPLACEMENT APPEARS TO
BE A CRT CONSOLE WITH AN ALPHANUMERIC KEYBOARD
INPUT WHICH CAN CONNECT AS A 'STAND ALONE' UNIT TO A
STANDARD TELEPHONE LINE. THE UNIT USES A DIRECT-
VIEW STORAGE TUBE (DVST) FOR A DISPLAY SCREEN AND
CONTAINS A VECTOR GENERATOR AND A SYMBOL GENERATOR
FOR THE FULL ASCII SYMBOL SET. IT CAN CONNECT TO
A CENTRAL COMPUTER VIA A 1200-2400 BAUD DATAPHONE
LINE. A MANUALLY-CONTROLLED ELECTRONIC CURSOR FOR
GRAPHICAL INPUT TO THE COMPUTER CAN ALSO BE ADDED.
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 443 9/2 5/5
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS
HUMAN FACTORS AND THE DESIGN OF TIME SHARING COMPUTER
SYSTEMS. (U)
NOV 67 25P NICKERSON, R. S. IELKIND, J.
I. CARBONELL, J. R. I
REPT. NO. SCIENTIFIC-2
CONTRACT: F1962B-68-C-0125
PROJ: AF-8668
TASK: 866800
MONITOR: AFCRL 68-0054

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO SCIENTIFIC REPT. NO. 3,
AD-666 065.

DESCRIPTORS: (1) TIME SHARING, HUMAN
ENGINEERING, DIGITAL COMPUTERS, MAN-MACHINE
SYSTEMS, PROGRAMMING LANGUAGES, ALGORITHMS,
OPTIMIZATION, COSTS (U)
IDENTIFIERS: TRADEOFFS (U)

THE ADVENT OF COMPUTER TIME SHARING POSES AN
EXTRAORDINARY CHALLENGE TO HUMAN FACTORS RESEARCH
DURING THE NEXT DECADE. BEFORE TIME SHARING, TWO
FACTS COMBINED TO DE-EMPHASIZE THE IMPORTANCE OF
HUMAN FACTORS CONSIDERATIONS IN THE DESIGN OF
COMPUTER SYSTEMS: (1) THE COST OF THE
COMPUTER'S TIME WAS EXORBITANTLY HIGH RELATIVE TO THE
COST OF USERS' TIME, AND (2) THE USERS
CONSTITUTED A SELECT, HIGHLY SKILLED AND HIGHLY
MOTIVATED GROUP OF SPECIALISTS. TWO OF THE
PROMISES OF TIME SHARING, HOWEVER, ARE (1) A
DRAMATIC REDUCTION IN THE COST OF COMPUTER TIME TO THE
INDIVIDUAL USER, AND (2) THE LARGE SCALE
AVAILABILITY OF COMPUTER FACILITIES TO INDIVIDUALS
UNTRAINED IN ANY AREAS OF COMPUTER TECHNOLOGY.
HUMAN FACTORS CONSIDERATIONS THEN BECOME IMPORTANT
BOTH FOR ECONOMIC AND PSYCHOLOGICAL REASONS. THIS
PAPER BRIEFLY NOTES WHAT A FEW OF THESE
CONSIDERATIONS ARE. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 556 5/2
FRANKFORD ARSENAL PHILADELPHIA PA
INFORMATION RETRIEVAL. A CRITICAL VIEW,
67 294P SCHECTER, GEORGE I

(U)

UNCLASSIFIED REPORT

AVAILABILITY: HARD COPY AVAILABLE FROM THOMPSON
BOOK STORE, 14TH AND F ST. N. W., WASHINGTON,
D. C. 20004, \$11.00.

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
ANNUAL COLLOQUIUM ON INFORMATION RETRIEVAL
(3RD), MAY 12-13, 1966, PHILADELPHIA, PA.

DESCRIPTORS: (+INFORMATION RETRIEVAL, REVIEWS),
COMPUTERS, BIBLIOGRAPHIES, SEARCH THEORY,
SUBJECT INDEXING, CHEMISTRY, PSYCHOLOGY, DATA
PROCESSING SYSTEMS, SYMPOSIA

(U)

IDENTIFIERS: ON-LINE SYSTEMS, INFORMATION
SYSTEMS

(U)

CONTENTS: MOVING CONGRESS INTO THE AGE OF
THE COMPUTER; INFORMATION SYSTEM NETWORKS--LETS
PROFIT FROM WHAT WE KNOW; THE BOLD (BIBLIOGRAPHIC
ON-LINE DISPLAY) SYSTEM; THE DESIGN AND
TESTING OF A FULLY AUTOMATIC INDEXING-SEARCHING
SYSTEM FOR DOCUMENTS CONSISTING OF EXPOSITORY TEXT;
THE TIP RETRIEVAL SYSTEM AT MIT; A LIST-
STRUCTURED CHEMICAL INFORMATION RETRIEVAL SYSTEM;
PERFORMANCE OF IR SYSTEMS; PSYCHOLOGY AND
INFORMATION RETRIEVAL; USER APPRAISAL OF AN
INFORMATION SYSTEM AND SERVICES THROUGH A PROGRAM OF
JOINT APPLIED RESEARCH; INFOL; A GENERALIZED
LANGUAGE FOR INFORMATION STORAGE AND RETRIEVAL
APPLICATIONS; GETTING IT OUT OF OUR SYSTEM;
RELATIONAL DATA FILE I; DESIGN PHILOSOPHY;
RELATIONAL DATA FILE II; IMPLEMENTATION; THE
SOLAR SYSTEM I; A GENERAL METHOD FOR ORGANIZING
AND SEARCHING FILES.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 666 9/2

BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS
ON MAN-COMPUTER INTERACTION: A MODEL AND SOME
RELATED ISSUES, (U)

SEP 67 42P CARBONELL, JAIME R. 1

REPT. NO. SCIENTIFIC-1, BBN-1593

CONTRACT: F19628-68-C-0125, ANPA ORDER-627

PROJ: 8668

TASK: 866801

MONITOR: AFRL 68-0053

UNCLASSIFIED REPORT

DESCRIPTORS: (COMPUTERS, MAN-MACHINE SYSTEMS),

BEHAVIOR, TIME SHARING, INTERACTIONS, COSTS,

DECISION THEORY, PROGRAMMING (COMPUTERS),

MATHEMATICAL MODELS (U)

IDENTIFIERS: ON-LINE SYSTEMS,

DEBUGGING (COMPUTERS), OPTIMAL CONTROL THEORY (U)

A SURVEY OF THE LITERATURE RELATED TO MAN-COMPUTER INTERACTION REVEALS THE MANY ASPECTS OF THIS PROBLEM, WHICH APPEARS TO BE IN THE CROSSROADS AMONG SUCH DIVERSE FIELDS AS COMPUTER LANGUAGES, COMPUTER SYSTEMS OPERATIONAL CHARACTERISTICS, CONTROL THEORY, DECISION THEORY, INFORMATION THEORY, APPLIED PSYCHOLOGY, COMPUTER DISPLAY AND INTERFACE ENGINEERING, ETC. IN THIS PAPER WE HAVE CHOSEN TO PRESENT THE ON-LINE INTERACTION FROM AN INFORMATION AND DECISION POINT OF VIEW. A MODEL IS GIVEN OF THE CASE IN WHICH A HUMAN OPERATOR IS ENGAGED ON-LINE IN THE SOLUTION OF A PROBLEM LIKE DEBUGGING A PROGRAM, TESTING A MODEL IN A SCIENTIFIC APPLICATION, OR PERFORMING A LIBRARY SEARCH. IN THIS MODEL THE HUMAN OPERATOR IS CONSIDERED TO SEEK TO MINIMIZE OVERALL COST. THIS COST IS OBTAINED BY ADDING THE OPERATIONAL COST OF BOTH MAN AND COMPUTER TO A REMNANT TERMINAL COST ORIGINATED BY THE REMAINING UNCERTAINTY. THIS ANALYSIS, PERFORMED FOR EACH OF A SET OF POSSIBLE ALTERNATIVES FOR ACTION, MAY LEAD TO SELECT AND EXECUTE ONE OF THEM, TO TERMINATE THE PROCESS, OR TO RE-EVALUATE THE POSSIBLE ALTERNATIVES AND/OR HYPOTHESES IN A SEARCH FOR NEW ONES. SOME PRACTICAL APPLICATIONS IN TERMS OF RESPONSE TIME AND OTHER CHARACTERISTICS OF A COMPUTER UTILITY ARE PRESENTED, AS WELL AS SOME THEORETICAL IMPLICATIONS FROM AN INFORMATIONAL POINT OF VIEW. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 730 9/2
CARNEGIE INST OF TECH PITTSBURGH PA
TIME SHARING. PART ONE. THE FUNDAMENTALS OF TIME
SHARING. PART TWO. AN EVALUATION OF COM-MERCIAL TIME
SHARING COMPUTERS. PART THREE. OPERATIONAL
MANAGEMENT OF TIME SHARING SYSTEMS. (U)
DESCRIPTIVE NOTE: DATA PROCESSING MONOGRAPH SERIES,
67 130P BELL, C. GORDON IGOLD, H.
M. ISTEADRY, A. C. ILINDE, RICHARD R. I
CHANEY, PAUL E. I
CONTRACT: NONR-740(24), SD-146

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY AIR
FORCE SYSTEMS COMMAND. PREPARED IN COOPERATION WITH
MIT, AND SYSTEM DEVELOPMENT CORPORATION.

DESCRIPTORS: (TIME SHARING, STATE-OF-THE-ART
REVIEWS), DATA STORAGE SYSTEMS, INPUT-OUTPUT
DEVICES, PROGRAMMING(COMPUTERS), REMOTE
CONTROL SYSTEMS, DIGITAL COMPUTERS, REAL TIME,
OPERATION, SCHEDULING, ECONOMICS, MANAGEMENT
PLANNING, CORRELATION TECHNIQUES, MULTIPLE
OPERATION (U)
IDENTIFIERS: ON-LINE SYSTEMS, BATCH PROCESSING,
PRIVACY(COMPUTERS) (U)

CONTENTS: THE FUNDAMENTALS OF TIME SHARING; AN
EVALUATION OF COMMERCIAL TIME SHARING COMPUTERS;
OPERATIONAL MANAGEMENT OF TIME SHARING SYSTEMS. (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 633 9/2
CALIFORNIA UNIV BERKELEY
A FACILITY FOR EXPERIMENTATION IN MAN-MACHINE
INTERACTION,
JAN 66 IIP LICHTENBERGER, W. W. I
PIRTLE, M. W. I
REPT. NO. P-3
CONTRACT: SD-185

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS, TIME
SHARING), (TIME SHARING, DIGITAL COMPUTERS),
(PROGRAMMING (COMPUTERS), MULTIPLE
OPERATION), MAN-MACHINE SYSTEMS, REMOTE CONTROL
SYSTEMS, DATA STORAGE SYSTEMS, TELETYPE SYSTEMS
IDENTIFIERS: ON-LINE SYSTEMS,
MULTIPROGRAMMING

(U)

(U)

THE TIME-SHARING SYSTEM INVOLVING MEMORY
RELABELING, COMMON ROUTINES, AND DUPLEX TELETYPE
OPERATION HAS BEEN IN OPERATION SINCE APRIL, 1965.
THE SYSTEM IS HIGHLY FLEXIBLE AND CAN PROVIDE A
RESPONSE TIME OF LESS THAN ONE SECOND. MEMORY
RELABELING IS ACCOMPLISHED WITH NO INCREASE IN ACCESS
TIME. THE NUMBER OF PROCESSOR MODES IS SMALL
(TWO), AND MODE TRANSITIONS ARE DONE IN SUCH A
WAY AS TO ENABLE INTERRUPT AND USER-CALLED SYSTEM
ROUTINES TO BE INDEPENDENT OF MODE. THE USER
MACHINE IS CLEAN AND WELL DEFINED. INPUT/OUTPUT IS
SIMPLER, MORE FOOLPROOF, AND DEVICE-INDEPENDENT.
THE USER IS GIVEN A VARIETY OF OTHER SERVICES
RANGING FROM GENERALIZED FILE-HANDLING CAPABILITY TO
STRING PROCESSING TO ASSEMBLERS, COMPIERS,
DEBUGGERS, AND EDITORS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 634 9/2
CALIFORNIA UNIV BERKELEY
REFERENCE MANUAL TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: REVISED ED.,
NOV 67 99P DEUTSCH, L. PETER ;
DURHAM, LARRY ; LAMPSON, BUTLER W. ;
REPT. NO. R-21

UNCLASSIFIED REPORT

DESCRIPTORS: (•DATA PROCESSING SYSTEMS, TIME
SHARING), (•PROGRAMMING (COMPUTERS), MULTIPLE
OPERATION), (•TIME SHARING, INSTRUCTION
MANUALS), SCHEDULING, TELETYPE SYSTEMS, REMOTE
CONTROL SYSTEMS, DATA STORAGE SYSTEMS (U)
IDENTIFIERS: FLOATING-POINT OPERATION, ON-LINE
SYSTEMS (U)

THE BERKELEY TIME-SHARING SYSTEM IS DIVIDED
INTO THREE MAJOR PARTS: THE MONITOR, THE
EXECUTIVE, AND THE SUBSYSTEMS. ONLY THE FIRST TWO
OF THESE ARE DISCUSSED IN DETAIL IN THIS MANUAL.
THE MANUAL ATTEMPTS TO DESCRIBE EXHAUSTIVELY ALL
THE FEATURES OF THE MONITOR AND IN ADDITION TO GIVE A
NUMBER OF IMPLEMENTATION DETAILS. IT ALSO
DESCRIBES THOSE FEATURES OF THE EXECUTIVE WHICH CAN
BE INVOKED BY A PROGRAM. THE WORD MONITOR IS USED
TO REFER TO THAT PORTION OF THE SYSTEM WHICH IS
CONCERNED WITH SCHEDULING, INPUT-OUTPUT, INTERRUPT
PROCESSING, MEMORY ALLOCATION AND SWAPPING, AND THE
CONTROL OF ACTIVE PROGRAMS. THE EXECUTIVE IS
CONCERNED WITH THE CONTROL OF THE DIRECTORY OF
SYMBOLIC FILE NAMES AND BACKUP STORAGE FOR THESE
FILES, AND VARIOUS MISCELLANEOUS MATTERS. OTHER
PARTS OF THE EXECUTIVE HANDLE THE COMMAND LANGUAGE BY
WHICH THE USER CONTROLS THE SYSTEM FROM HIS TELETYPE,
THE IDENTIFICATION OF USERS AND SPECIFICATION OF THE
LIMITS OF THEIR ACCESS TO THE SYSTEM. THESE
SUBJECTS ARE DISCUSSED IN THE EXECUTIVE REFERENCE
MANUAL, AD-667 635. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 635 9/2
CALIFORNIA UNIV BERKELEY
REFERENCE MANUAL FOR THE TIME-SHARING EXECUTIVE, (U)
JAN 68 248 DURHAM, L. IETHERTON, R. I
REPT. NO. R-22
CONTRACT: SD-185

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, TIME
SHARING), (+PROGRAMMING(COMPUTER,)), MULTIPLE
OPERATION), (+TIME SHARING, INSTRUCTION
MANUALS), TELETYPE SYSTEMS, REMOTE CONTROL
SYSTEMS, PROGRAMMING LANGUAGES, INPUT-OUTPUT
DEVICES
IDENTIFIERS: ON-LINE SYSTEMS (U)
(U)

THE PROJECT GENIE OPERATING SYSTEM IS A MEDIUM
SCALE MULTI-ACCESS COMPUTATIONAL SYSTEM WHICH
IMPLEMENTS A POWERFUL AND COMPLEX USER MACHINE. IT
IS THE ROLE OF THE COMMAND LANGUAGE (HERE CALLED
THE EXECUTIVE) TO PROVIDE SOME TOOLS TO CONTROL
THIS USER MACHINE, AND TO PROVIDE THOSE SERVICES
WHICH USERS HAVE COME TO EXPECT OF CONVERSATIONAL
SYSTEMS. THIS DOCUMENT DESCRIBES THE SYSTEM
COMMAND LANGUAGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 659 9/2
CALIFORNIA UNIV BERKELEY
A USER MACHINE IN A TIME-SHARING SYSTEM. (U)
DESCRIPTIVE NOTE: REVISED ED.,
AUG 66 12P LAMPSON, B. W. I
LICHTENBERGER, W. W. I PIRTE, M. W. I
CONTRACT: SD-185

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN PROCEEDINGS OF THE
IEEE, V54 N12 P1766-74 1966.
SUPPLEMENTARY NOTE: REPORT ON PROJ. GENIE. REVISION
OF REPORT DATED 12 JUL 66.

DESCRIPTORS: (1) DATA PROCESSING SYSTEMS, (2) TIME
SHARING), (3) PROGRAMMING (COMPUTERS), MULTIPLE
OPERATION), DATA STORAGE SYSTEMS, REMOTE CONTROL
SYSTEMS, INPUT-OUTPUT DEVICES, MAN-MACHINE
SYSTEMS (U)
IDENTIFIERS: GENIE PROJECT, MULTIPROCESSING,
ON-LINE SYSTEMS (U)

THE PAPER DESCRIBES THE DESIGN OF THE COMPUTER SEEN
BY A MACHINE-LANGUAGE PROGRAMMER IN A TIME-SHARING
SYSTEM DEVELOPED AT THE UNIVERSITY OF CALIFORNIA
AT BERKELEY. SOME OF THE INSTRUCTIONS IN THIS
MACHINE ARE EXECUTED BY THE HARDWARE, AND SOME ARE
IMPLEMENTED BY SOFTWARE. THE USER, HOWEVER, THINKS
OF THEM ALL AS PART OF HIS MACHINE, A MACHINE HAVING
EXTENSIVE AND UNUSUAL CAPABILITIES, MANY OF WHICH
MIGHT BE PART OF THE HARDWARE OF A (CONSIDERABLY
MORE EXPENSIVE) COMPUTER. AMONG THE IMPORTANT
FEATURES OF THE MACHINE ARE THE ARITHMETIC AND STRING
MANIPULATION INSTRUCTION - THE VERY GENERAL MEMORY
ALLOCATION AND CONFIGURATION MECHANISM, AND THE
MULTIPLE PROCESSES WHICH CAN BE CREATED BY THE
PROGRAM. FACILITIES ARE PROVIDED FOR COMMUNICATION
AMONG THESE PROCESSES AND FOR THE CONTROL OF
EXCEPTIONAL CONDITIONS. THE INPUT-OUTPUT SYSTEM IS
CAPABLE OF HANDLING ALL OF THE PERIPHERAL EQUIPMENT
IN A UNIFORM AND CONVENIENT MANNER THROUGH FILES
HAVING SYMBOLIC NAMES. PROGRAMS CAN ACCESS FILES
BELONGING TO A NUMBER OF PEOPLE, BUT EACH PERSON CAN
PROTECT HIS OWN FILES FROM UNAUTHORIZED ACCESS BY
OTHERS. SOME MENTION IS MADE AT VARIOUS POINTS OF
THE TECHNIQUES OF IMPLEMENTATION, BUT THE MAIN
EMPHASIS IS ON THE APPEARANCE OF THE USER'S MACHINE.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-668 078 9/2 5/2
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER
SCIENCE
STEPS TOWARD A GENERAL PURPOSE TIME-SHARING SYSTEM
USING LARGE CAPACITY CORE STORAGE AND TSS/360. (U)
MAR 68 38P FIKES, RICHARD E. I
LAUER, HUGH C.; VAREHA, ALBIN L., JR.
CONTRACT: SD-146
PROJ: AF-9718
MONITOR: AFOSR 68-0763

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
NATIONAL CONFERENCE OF ASSOCIATION FOR COMPUTING
MACHINERY, 1968.

DESCRIPTORS: (*DATA STORAGE SYSTEMS, TIME
SHARING), INFORMATION RETRIEVAL,
PROGRAMMING (COMPUTERS), COSTS, DECISION
MAKING, CYBERNETICS, TIME, ALGORITHMS, FLOW
CHARTING, CORRELATION TECHNIQUES (U)
IDENTIFIERS: *LARGE CAPACITY CORE STORAGE,
TSS (TIME SHARING SYSTEM), *TIME SHARING
SYSTEMS (U)

THIS PAPER IS A PROGRESS REPORT OF AN EFFORT AT
CARNEGIE-MELLON UNIVERSITY TO DETERMINE HOW A
LARGE CAPACITY CORE STORAGE FACILITY (LCS) CAN BE
USED TO REDUCE THE DEMAND PAGING OVERHEAD COSTS IN
THE IBM SYSTEM/360 TIME SHARING SYSTEM
(TSS/360) AND IN SIMILAR GENERAL PURPOSE TIME-
SHARING SYSTEMS. A DISCUSSION IS PRESENTED OF HOW
THE NUMBER OF PAGING OPERATIONS AND THE COST OF EACH
PAGING OPERATION CAN BE REDUCED BY USING LCS AS
BOTH A SWAPPING DEVICE AND AN EXTENSION OF EXECUTABLE
CORE. TWO PROBLEMS WHICH ARISE ARE CONSIDERED.
A NEW ALGORITHM FOR RELEASING CORE IS PRESENTED AND
COMPARED WITH TWO EXISTING ALGORITHMS. FINALLY,
RESULTS FROM A FEASIBILITY IMPLEMENTATION OF THE
IDEAS IN A PRE-RELEASE VERSION OF TSS/360 ARE
PRESENTED AS A DEMONSTRATION OF THE VALIDITY OF USING
LCS TO REDUCE PAGING OVERHEAD. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-668 084 9/2

CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER
SCIENCE

A METHODOLOGY FOR EVALUATING TIME-SHARED COMPUTER
SYSTEM USAGE, (U)

AUG 67 151P GOLD, MICHAEL M. I

CONTRACT: SD-146, NONR-4102(DI)

PROJ: AF-9718

MONITOR: AFOSR 68-0795

UNCLASSIFIED REPORT

DESCRIPTORS: (+DIGITAL COMPUTERS, +TIME
SHARING), MAN-MACHINE SYSTEMS, BEHAVIOR,
PERFORMANCE(ENGINEERING),
PROGRAMMING(COMPUTERS), PROGRAMMING LANGUAGES,
COSTS, TIME, LEARNING, FEEDBACK, PROBLEM
SOLVING, QUESTIONNAIRES, DATA PROCESSING SYSTEMS (U)
IDENTIFIERS: METHODOLOGY (U)

THE DEVELOPMENT OF TIME-SHARED COMPUTER SYSTEMS HAS
LED TO MAJOR TECHNICAL AND PHILOSOPHICAL CHANGES IN
THE COMPUTER FIELD IN THIS DECADE. A LARGE NUMBER
OF DESIGNERS, MANUFACTURERS, AND USERS OF SUCH
SYSTEMS HAVE EXPENDED GREAT AMOUNTS OF EFFORT IN THE
DEVELOPMENT OF THE CAPABILITIES OF THE COMPUTER AND
THE MEANS TO USE IT. HOWEVER, LITTLE OR NO EFFORT
HAS YET BEEN EXPENDED TO EVALUATE THESE SYSTEMS IN
TERMS OF THEIR USEFULNESS FOR PRESENT OR FUTURE
CUSTOMERS. THE RESEARCH REPORTED HERE HAS FOCUSED
ON THE DEVELOPMENT OF A METHODOLOGY THROUGH WHICH
TIME-SHARED COMPUTER SYSTEM USAGE CAN BE EVALUATED.
IT IS BASED ON A STUDY OF THE CHARACTERISTICS AND
DESIGN OF PRESENT AND PROPOSED COMPUTER SYSTEMS, AS
WELL AS RELEVANT BEHAVIORAL THEORY AND RESEARCH.
FIVE CATEGORIES OF VARIABLES ARE INCLUDED IN THE
RESULTING METHODOLOGY, NAMELY THOSE WHICH ARE
MEASURES OF: (1) THE COST OF USING THE SYSTEM;
(2) THE PERFORMANCE PRODUCED THROUGH THE USE OF
THE COMPUTER SYSTEM; (3) THE SPEED WITH WHICH
RESULTS COULD BE PRODUCED; (4) THE AMOUNT OF
LEARNING RESULTING FROM THE USE OF THE COMPUTER
SYSTEM; AND (5) THE ATTITUDES OF THE USERS OF THE
COMPUTER SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-669 308 9/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
CERTAIN TIMING CHARACTERISTICS OF A MULTIPANEL
CALCULATING SYSTEM (NEKOTORYE VREMENNYE
KHARAKTERISTIKI MNOGOPULTOVOI VYCHISLITELNOI
SYSTEMY).

(U)

SEP 67 13P MISHURNAYA, M. V. 1
REPT. NO. FTD-MT-24-232-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF
VYCHISLITELNAYA TEKHNIKA V MASHINOSTROENII (USSR)
P14-20 1965.

DESCRIPTORS: (DIGITAL COMPUTERS, REMOTE CONTROL
SYSTEMS), TIME SHARING, MULTIPLE OPERATION,
CODING, INPUT-OUTPUT DEVICES, TELEGRAPH SYSTEMS,
USSR

(U)

IDENTIFIERS: TRANSLATIONS, DIGITAL DATA
TRANSMISSION, MINSK-2 COMPUTER (USSR)

(U)

THE PRESENT PAPER IS A SEQUEL TO ONE ENTITLED
'THE MULTI-TERMINAL COMPUTER' BY THE SAME
AUTHOR. EACH TERMINAL IS AN INPUT/OUTPUT
TELETYPEWRITER LINKED TO A BUFFER SECTION IN THE MAIN
UNIT. AN INTERRUPT SUBROUTINE IN THE COMPUTER IS
INITIATED FROM THE INPUT BUFFER WHEN NEW DATA ARE FED
FROM ONE OF THE TERMINALS OR WHEN THE RESULTS OF
CALCULATIONS ARE TO BE TRANSMITTED BACK TO A
PARTICULAR TERMINAL. THIS SUBROUTINE CONTAINS
PROVISIONS FOR A DELAY AND CERTAIN PRIORITY DECISIONS
TO ALLOW FOR AN ORDERLY PROCESSING OF INFORMATION BY
THE COMPUTER. THE TIME REQUIRED FOR A PROCESSING
OF A PROBLEM ORIGINATING FROM A TERMINAL IS
CALCULATED. THE DELAY TIME FOR THE SIMULTANEOUS
OPERATION OF SEVERAL TERMINALS IS ANALYZED AND THE
APPROPRIATE FORMULAS ARE GIVEN. ALL DERIVED
EXPRESSIONS ARE VALID FOR ANY MULTI-TERMINAL COMPUTER
SYSTEM. THE OPERATION OF AN INSTALLATION IN WHICH
THE I/O TERMINALS ARE ARRANGED IN GROUPS IS
DISCUSSED AND ITS ADVANTAGES ARE POINTED OUT. IN
THIS SYSTEM SEVERAL TERMINALS TIME-SHARE A SINGLE
COMMUNICATION LINE AND A SINGLE SECTION IN THE INPUT
BUFFER.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-669 368 9/2 6/4
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
HAND-PRINTED INPUT FOR ON-LINE SYSTEMS, (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
APR 68 24P BERNSTEIN, M. I. I
REPT. NO. TM-3937/000/00
CONTRACT: F19628-67-C-0004, AS12-76

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, CHARACTER
RECOGNITION), (+PROGRAMMING (COMPUTERS),
CHARACTER RECOGNITION), INPUT-OUTPUT DEVICES,
MAN-MACHINE SYSTEMS, TIME SHARING, REAL TIME,
DIGITAL COMPUTERS, CATHODE RAY TUBE SCREENS,
FLOW CHARTING (U)
IDENTIFIERS: ON-LINE SYSTEMS, Q-32 COMPUTER,
RAND TABLET (U)

THE DOCUMENT DESCRIBES A PROGRAM FOR RECOGNIZING
HAND-PRINTED INFORMATION IN REAL TIME, WHICH PROVIDES
ON-LINE COMPUTER USERS WITH A MEANS OF INPUTTING TWO-
DIMENSIONAL INFORMATION AS SIMPLY AS WRITING WITH PEN
AND PAPER. THE PROGRAM OPERATES UNDER THE TIME-
SHARING SYSTEM ON THE Q-32 COMPUTER AT SDC,
AND USES A RAND TABLET FOR INPUT AND A CRT
DISPLAY (REAR-PROJECTED ON THE TABLET FOR
OUTPUT). EACH USER OF THE PROGRAM BUILDS A
UNIQUE CHARACTER DICTIONARY, BASED ON SAMPLES OF HIS
OWN INPUT CHARACTERS. FOR EACH USER, THE PROGRAM
CURRENTLY RECOGNIZES ABOUT 100 DIFFERENT CHARACTERS,
WHICH ARE CHOSEN FROM A LARGER ALPHABET BY THE
INDIVIDUAL USER. THE DOCUMENT DESCRIBES HOW THE
RECOGNITION PROGRAM INTERFACES WITH THE TIME-
SHARING SYSTEM; WHAT FUNCTIONS THE PROGRAM
PERFORMS IN RECOGNIZING HAND-DRAWN INPUT; AND HOW THE
CHARACTER DICTIONARY IS CONSTRUCTED AND TESTED.
THE REPORT CONCLUDES BY SUGGESTING THAT THE
CHARACTER RECOGNIZER WILL REALIZE ITS GREATEST
POTENTIAL BY BEING APPLIED TO PROBLEMS THAT REQUIRE
FREE-FORM (RATHER THAN LINEAR KEYBOARD) INPUT.
(AUTHOR) (U)

COMPUTER COMPONENTS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-256 490

ILLINOIS UNIV URBANA DIGITAL COMPUTER LAB

FLOW-GATING

MAR 61

IV

GUCKEL, HENRY; KUNIHIRO, TOSHIRO (U)

CROW, RONALD K. I

REPT. NO. 106

CONTRACT: NONR182415

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *DIGITAL COMPUTERS,
*TRANSISTORS, CODING, COMPUTER STORAGE DEVICES, DATA
STORAGE SYSTEMS, ELECTRICAL PROPERTIES, FEEDBACK,
GATES (CIRCUITS), TRIGGER CIRCUITS (U)

WORK CONCERNS TRANSISTOR SELECTION AND EVALUATION,
THE BASIC DESIGN PROBLEM, AND THE EVALUATION OF THE
FLOW-GATING MEMORY. THE PROPOSED SYSTEM CONSISTS OF
14 FLOW-GATING FLIPFLOPS, WHICH CONSTITUTE A 1/4 WORD
(2 TRANSISTORS PER BIT), THE READ-IN DRIVER
(18/14 TRANSISTORS PER BIT), THE READ-OUT DRIVER
(10/14 TRANSISTORS PER BIT), AND TERMINATION
EQUIPMENT (2/11 TRANSISTORS PER BIT). THE
SYSTEM USES FIVE TRANSISTORS PER BIT OF WHICH 12/14
ARE GF45011, 40/77 ARE N-101 AND THE REMAINING
PARTS ARE OF THE N-100 TYPE. THE TERMINAL
PROPERTIES ARE GIVEN. THE AC BEHAVIOR IS
DISCUSSED IN CONSIDERABLE DETAIL. THE READ-IN
SPEED, AFTER TOLERANCE CORRECTION, IS LESS THAN 90
NSEC.; THE READ-OUT SPEED IS IN THE VICINITY OF 80
NSEC., WHEN REFERENCED TO THE INPUT OF THE RESPECTIVE
DRIVERS. THIS APPARENTLY SATISFIES THE PROPOSED
REQUIREMENT OF 150 NSEC. ACCESS TIMES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-257 018

MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS

LAB

TUNNEL DIODE CIRCUITS FOR SWITCHING THIN FILM
MEMORIES

(U)

JAN 61 IV DAVIS, PAUL C.

REPT. NO. TM100

CONTRACT: AF33 616 5489

UNCLASSIFIED REPORT

DESCRIPTORS: *DIODES, *PULSE GENERATORS, *SWITCHING
CIRCUITS, *TRIGGER CIRCUITS, ARSENIDES, CIRCUITS,
COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE
SYSTEMS, DESIGN, GALLIUM COMPOUNDS, GERMANIUM,
MAGNETIC MATERIALS, MATHEMATICAL ANALYSIS, THIN FILMS
(STORAGE DEVICES), TRANSMISSION LINES

(U)

IDENTIFIERS: THIN FILMS, THIN FILMS
ELECTRONICS

(M)

TUNNEL-DIODE CIRCUITS ARE INVESTIGATED
THEORETICALLY AS A SOURCE OF HIGH-SPEED CURRENT
PULSES CAPABLE OF SWITCHING THIN FILM MEMORIES IN THE
ORDER OF TENS OF MILLIMICROSECONDS. BREAK-POINT
MODELS OF THE CHARACTERISTIC CURVE ARE CONSTRUCTED
AND PIECEWISE LINEAR ANALYSIS IS USED TO PREDICT AND
EXTRAPOLATE EXPERIMENTAL RESULTS. THREE BASIC
CIRCUITS WERE CHOSEN AS DRIVERS FOR VARIOUS LOAD
FORMS AND LEVELS. THESE WERE TRIED IN THE
LABORATORY AND RESULTS ARE GIVEN. EACH OF THESE
CIRCUITS UTILIZED A NOVEL QUICK-RECOVERY FEATURE
WHICH WAS RESPONSIBLE FOR ABOUT ONE-HALF TO TWO-
THIRDS OF THE SUM OF THE DIODE PEAK CURRENTS
NECESSARY FOR A GIVEN LOAD CURRENT. THE RECOVERY
TIME WAS MADE EQUAL TO THE PULSE WIDTH, WHICH WAS 20
MILLIMICROSECONDS. THE TRIGGERING DELAY TIME WAS
APPROXIMATELY ONE-HALF THE PULSE WIDTH FOR ALL THREE
CIRCUITS. IT WAS CONCLUDED THAT TUNNEL DIODES CAN
BE USED TO DRIVE THIN MAGNETIC FILMS IN STRIP LINES
AT THE SPEED DESIRED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-257 182

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
CRYOSAR MEMORY DESIGN

(U)

MAY 61 IV JOHNSTON, R.C.I

REPT. NO. 53G 0044

CONTRACT: AF19 604 7400

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *ELECTRICAL EQUIPMENT, COMPUTERS, DESIGN,
ELECTRIC FIELDS, GERMANIUM, IMPURITIES, IONIZATION (U)

THE COMPENSATED CRYOSAR IS A NEGATIVE-RESISTANCE
TWO-TERMINAL DEVICE UTILIZING A BULK EFFECT IN
GERMANIUM AT LIQUID HELIUM TEMPERATURES. ITS USE IN
A COMPUTER MEMORY IS FORESEEN BECAUSE OF ITS BISTABLE
NATURE AND ITS EASE OF FABRICATION IN LARGE ARRAYS.
HOWEVER, CAREFUL CONSIDERATION OF DEVICE AND
CIRCUIT PARAMETERS IS NECESSARY IF A SUCCESSFUL LARGE
MEMORY IS TO BE ACHIEVED. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-259 229
INTERNATIONAL BUSINESS MACHINES CORP Poughkeepsie N Y
PROJECT LIGHTNING (U)
NOV 60 IV
CONTRACT: N083R77508

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *COMPUTERS,
*CRYOGENICS, *DATA PROCESSING SYSTEMS, *DATA STORAGE
SYSTEMS, *SWITCHING CIRCUITS, CIRCUITS, DESIGN,
MATERIALS, MATHEMATICAL LOGIC, MEASUREMENT,
SUPERCONDUCTORS, THERMAL CONDUCTIVITY, THIN FILMS
(STORAGE DEVICES), TRIGGER CIRCUITS (U)
IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS, (U)
THIN FILMS ELECTRONICS

WORK WAS CONTINUED IN CRYOGENICS AND ASSOCIATED
MACHINE ORGANIZATION DEVOTED TO EVALUATING THE
FEASIBILITY OF A COMPUTER SYSTEM CAPABLE OF
PERFORMING BASIC LOGIC OPERATIONS AT A RATE OF 1000
MC. IT WAS CONCLUDED THAT SUBSTANTIAL IMPROVEMENT
IN THE EFFICIENCY OF A KILOMEGACYCLE CRYOTRONIC
MACHINE CAN BE OBTAINED BY REDUCING THE PLANAR
DIMENSIONS OF THE CIRCUITS AND USING A SUBSTRATE
HAVING HIGH THERMAL CONDUCTIVITY. EFFORTS WERE
MADE TO FIND SUBSTRATES WHICH CAN BE USED FOR
CIRCUITS AND WHICH WILL ALLEVIATE THE HEAT PROBLEM BY
INCREASING THE THERMAL CONDUCTIVITY TO THE BATH. A
FIRST SET OF RESULTS WAS OBTAINED IN THE MULTIPLEXING
STUDY AND PRELIMINARY DATA ON THE EFFECT OF QUEUE
LENGTH ARE REPORTED. A PLAN TO DESIGN AND CONSTRUCT
A HIGH-SPEED ADDRESSABLE MEMORY WAS PREPARED. THE
MODIFICATIONS OF THE CRYOTRON NETWORK SIMULATOR
RESULTED IN SIMULATION RESULTS THAT AGREED WITH
EXPERIMENTAL RESULTS FOR SLOW CROSSED-FILM CRYOTRON
CIRCUITS. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-259 376

TEXAS INSTRUMENTS INC DALLAS

SILICON SEMICONDUCTOR SOLID CIRCUITS

MAY 61 1V BROWER, WILLIAM; CRAGON, HARVEY (U)

CONTRACT: AF33 600 42210

MONITOR: ASD 1R7 065 V1

UNCLASSIFIED REPORT

DESCRIPTORS: *DIODES, *SEMICONDUCTORS, *TRANSISTORS,
ANHYDRIDES, BORATES, BORON, CAPACITORS, CHLORIDES,
CIRCUITS, CLEANING, CONTAINERS, DESIGN, DIFFUSION,
DIGITAL COMPUTERS, ELECTRICAL PROPERTIES, EVAPORATION,
MANUFACTURING METHODS, MEASUREMENT, METHYL RADICALS,
OXIDES, PHOSPHORUS, PHOTOENGRAVING, PRINTED CIRCUITS,
SILICON, SOLID STATE PHYSICS, SUBMINIATURE ELECTRONIC
EQUIPMENT, TEST SETS, THIN FILMS (STORAGE DEVICES),
TRIGGER CIRCUITS (U)

IDENTIFIERS: THIN FILMS, THIN FILMS (M)

ELECTRONICS

PROCESS TECHNIQUES REQUIRED FOR THE FABRICATION OF
SEMICONDUCTOR NETWORKS ARE BEING ESTABLISHED.
STUDIES OF SILICON SLICE PREPARATION, DIFFUSION,
CONTACT FORMATION, FILM DIELECTRICS AND TEST
STRUCTURES ARE DISCUSSED. EQUIPMENT ASSEMBLY
TECHNIQUES FOR A SERIAL, DIGITAL COMPUTER ARE
INVESTIGATED. (AUTHOR) (U)

UNCLASSIFIED

OLC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-240 117

COMPUTER TECHNIQUES LAB STANFORD RESEARCH INST MENLO PARK
CALIF

FUNDAMENTAL INVESTIGATION OF DIGITAL COMPUTER STORAGE
AND ACCESS TECHNIQUES (U)

MAY 61 IV MILLER, S.W. I

CONTRACT: AF30 602 2227

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *DIGITAL COMPUTERS, CAPACITORS, COSTS, DELAY
LINES, FERROELECTRICITY, MAGNETIC CORES, MAGNETIC
TAPE, NEGATIVE RESISTANCE CIRCUITS, PHOTOGRAPHY,
SUPERCONDUCTIVITY, SWITCHING CIRCUITS,
THERMOPLASTICS (U)

COMPUTER TECHNIQUES LAB., STANF RD RESEA CH
INST., MENLO PARK, CALIF. FUNDAMENTAL
INVESTIGATION OF DIGITAL COMPUTER STORAGE AND ACCESS
TECHNIQUES. REPT. FOR 1 APR 60-1 APR 61, BY
S. W. MILLER. MAY 61, OP. INCL. ILLUS. 112
REFS. (CONTRACT AF 30(602)2227, PROJ.
4027) (HADC TR 61-117A) UNCLASSIFIED REPORT
DESCRIPTORS: *DIGITAL COMPUTERS, *MEMORY
DEVICES, *DATA STORAGE SYSTEMS, SWITCHING
CIRCUITS, MAGNETIC CORES, FERROELECTRICITY,
CAPACITORS, NEGATIVE RESISTANCE CIRCUITS,
DELAY LINES, PHOTOGRAPHY, UPERCONDUCTIVITY,
COSTS, MAGNETIC TAPE, MAGNETIC CORE SWITCHES.
OPEN-ENDED TERMS: THERMOPLASTIC RECORDING.
THE ARTIFICE OF A CONCEPTUAL MODEL OF A STORAGE
UNIT WAS USED IN ORDER TO CLASSIFY THE VARIOUS KINDS
OF STORAGE UNITS ACCORDING TO THEIR TERMINAL
CHARACTERISTICS. THE IMPORTANT TERMINAL
CHARACTERISTICS ARE THE STORAGE CAPACITY, SPEED AND
ORDER OF ACCESS, THE OPERATING MODE, AND THE
PERMANENCE OF THE STORED DATA. THIS MODEL WAS
DISSECTED INTO FOUR FUNDAMENTAL PARTS, AN AGGREGATE
OF STORAGE REGISTERS, ACCESS EQUIPMENT FOR SELECTION
AND EXCITATION OF THE DESIRED REGISTER THE SENSING
EQUIPMENT FOR DETERMINING THE DATA STORED IN THE
REGISTER, AND THE ORGANIZATIONAL SCHEME USED FOR
THEIR INTERCONNECTION. THE VARIOUS TECHNIQUES FOR
ACHIEVING THESE FUNDAMENTAL OPERATIONS, EITHER IN USE
OR BEING DEVELOPED, ARE OUTLINED AND DISCUSSED.
THE RELATION BETWEEN THE USE OF PARTICULAR
TECHNIQUES IN A STORAGE UNIT AND THE POSITION OF THAT
STORAGE UNIT ON THE CAPACITY VS SPEED GRAPH IS SHOWN
WITH SOME PREDICTIONS FOR IMPROVEMENTS.

9AUTHOR)

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DWC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-260 118
COMPUTER TECHNIQUES LAB STANFORD RESEARCH INST MENLO PARK
CALIF
MAGNETIC CORE ACCESS SWITCHES (U)
MAY 61 IV HAYNES, JOHN L. MINNICK, ROBERT C. I
CONTRACT: AF30 602 2227

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *DIGITAL COMPUTERS, ALGEBRA, DESIGN,
ELECTRONIC SWITCHES, MAGNETIC CORES, MATHEMATICAL
ANALYSIS, MATRIX ALGEBRA, SWITCHING CIRCUITS (U)

A NUMBER OF THE MORE COMMONLY KNOWN MAGNETIC CORE
ACCESS SWITCHES ARE COMBINED IN A SINGLE ANALYTICAL
MODEL. IN ADDITION TO YIELDING AS SPECIAL CASES THE
KNOWN ACCESS SWITCHES ON WHICH IT IS BASED, THIS MODEL
PRODUCES MANY APPARENTLY NEW SWITCHES.
RELATIONSHIPS AMONG THE VARIOUS PARAMETERS IN THIS
MODEL ARE DEVELOPED IN SUCH A WAY THAT THE DESIGNER
MAY CHOOSE THE NUMBER OF DRIVERS, THE LOAD-SHARING
FACTOR, THE NUMBER OF TURNS OF WIRE PER SWITCH CORE
AND THE MAGNITUDE OF THE MAXIMUM DISTURBING
MAGNETOMOTIVE FORCE WITHIN CERTAIN LIMITS. AS
FURTHER AIDS TO THE DESIGNER, A NUMBER OF TABLES ARE
INCLUDED AND ALGORITHMS ARE GIVEN WHICH MAY BE USED
TO MATCH THE SWITCH PROPERTIES CLOSELY TO THE DESIGN
REQUIREMENTS. SEVERAL METHODS ARE DEVELOPED FOR
ECONOMIZING ON THE NUMBER OF DRIVERS USED IN
SWITCHES, AND CERTAIN SPECIAL ACCESS SWITCHES ARE
TREATED. THE CURRENT KNOWLEDGE IS REVIEWED ON A
FAIRLY RECENT AND IMPORTANT CLASS OF ACCESS
SWITCHES, KNOWN AS LOAD-SHARING ZERO-NOISE SWITCHES.
THESE SWITCHES ARE COMPARED WITH ONE ANOTHER, AND A
FUNDAMENTAL THEOREM IS PROVED THAT SUCH SWITCHES CAN
HAVE NO MORE OUTPUTS THAN INPUTS. SEVERAL NEW
CLASSES OF LOAD-SHARING ZERO-NOISE SWITCHES ARE
DEVELOPED AND ANALYZED; IN PARTICULAR, SWITCHES ARE
DEVELOPED WHICH FOR A GIVEN NUMBER OF OUTPUTS ALLOW
MORE FLEXIBILITY IN THE CHOICE OF THE LOAD-SHARING
FACTOR THAN FORMERLY WAS THE CASE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-260 292

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *COMPUTER STORAGE DEVICES,
*DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS,
*DIGITAL COMPUTERS, *DIODES, COMPUTERS, DESIGN,
INSTRUMENTATION, MATERIALS, MATHEMATICAL LOGIC,
RECTIFIERS, SEMICONDUCTORS, SWITCHING CIRCUITS
IDENTIFIERS: LIGHTNING PROJECT

(U)

(U)

CONTENTS: MILLIMICROSECOND LOGIC CIRCUITS
CLOCK POWERED CIRCUITS BASEBAND CIRCUITS
MEMORIES FABRICATION MEMORY TEST MACHINE DESIGN
SYSTEM STUDIES INSTRUMENTATION

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-260 463

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *COMPUTERS,
*DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS,
*STORAGE TUBES, *TRIODES, CIRCUITS, DESIGN, DIODES,
ELECTRON TUBES, FERRITES, GALLIUM COMPOUNDS,
GERMANIUM, MATHEMATICAL ANALYSIS, MATHEMATICAL LOGIC,
RECTIFIERS, SEMICONDUCTORS, SOLID STATE PHYSICS,
TRANSISTORS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

THIS SUPPLEMENTAL REPORT PRESENTS MATERIAL NOT
COVERED IN THE MAIN COVER OF IRR-8A. THE MAIN
TOPICS ARE: EXPLORATORY RESEARCH, DEVICE
RESEARCH AND PRODUCTION, AND CERTAIN ADDITIONS NOT
COMPLETED IN TIME FOR INCLUSION IN THE MAIN REPORT.
THESE COVER AREAS IN CIRCUIT AND MEMORY
DEVELOPMENT. (AUTHOR)

(U)

UNCLASSIFIED

DCC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-260 471

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

1V

WARBURTON, PETER;

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *COMPUTERS,
*DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS,
CIRCUITS, DESIGN, MATHEMATICAL LOGIC

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

CONTENTS: THE PREMISE OF PROJECT LIGHTNING
SYSTEM STUDIES INPUT-OUTPUT COMPUTERS A SMALL 40-
BIT COMPUTER SYSTEM DESIGN OF A LARGE 40-BIT
COMPUTER

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 782

STANFORD UNIV CALIF STANFORD ELECTRONICS LABS
THE SELECTION PROBLEM FOR MINIMAL-STATE SEQUENTIAL
CIRCUITS

(U)

IV DAVIDSON, W.H. I

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *DATA PROCESSING SYSTEMS,
*DATA STORAGE SYSTEMS, *SEQUENCE SWITCHES, *SWITCHING
CIRCUITS, DIGITAL SYSTEMS, EQUATIONS, MATHEMATICAL
LOGIC, MATRIX ALGEBRA, STATISTICAL ANALYSIS,
THEORY

(U)

A TECHNIQUE IS DISCUSSED THAT WILL SELECT FROM THE
SET OF MINIMAL-STATE CIRCUITS THOSE WHICH WILL HAVE
THE LOWEST EXPECTED LOGIC COST. THE RELATION
BETWEEN INFORMATION CONTENT AND THE EXPECTED COST OF
THE LOGIC IS CLEARLY DEMONSTRATED FOR THE CASES
DISCUSSED. THIS INDICATES THAT IF CIRCUITS CAN BE
DESIGNED THAT HAVE SMALL INFORMATION CONTENTS, THEY
WILL ALSO HAVE INEXPENSIVE ASSOCIATED LOGIC. IT
MAY BE POSSIBLE TO FIND DESIGN PROCEDURES THAT WILL
GENERATE CIRCUITS WITH SMALL INFORMATION CONTENTS AND
THUS WITH LOW-COST LOGIC. ALSO, IT SEEMS
REASONABLE TO EXPECT THAT A RELATION SHOULD EXIST
BETWEEN AN APPROPRIATELY DEFINED INFORMATION CONTENT
FOR THE CIRCUIT'S INPUT-OUTPUT SEQUENCES AND ITS
INFORMATION CONTENT. (AUTHOR O

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800794

AD-261 27:

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC
PRODUCTS

MICRO-MODULE PRODUCTION PROGRAM

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *MANUFACTURING METHODS,
*SUBMINIATURE ELECTRONIC EQUIPMENT, CERAMIC
CAPACITORS, COMMUNICATION EQUIPMENT, COMPUTERS,
CONTAINERS, CRYSTAL HOLDERS, CRYSTALS, DESIGN, DIODES,
MATERIALS, PACKAGED CIRCUITS, PRODUCTION, QUARTZ,
RELIABILITY, RESISTORS, SEMICONDUCTORS, TESTS, THIN
FILMS (STORAGE DEVICES), TRANSISTORS (U)

IDENTIFIERS: AN/PRC-81, AN/TYK-9, THIN
FILMS, THIN FILMS ELECTRONICS (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-267 109

SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS

DIV

PROJECT LIGHTNING. VOLUME II

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: +DIGITAL COMPUTERS; +ELECTRODEPOSITION,
+MAGNETIC TAPE; +PROCESSING, COMPUTER LOGIC, COMPUTER
STORAGE DEVICES; DATA PROCESSING SYSTEMS; DATA STORAGE
SYSTEMS; FERROMAGNETIC MATERIALS; FILMS; GLASS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

RESEARCH TO SERVE AS THE BASIS FOR THE EVOLUTION OF
AN ULTRAHIGH-SPEED DATA-PROCESSING SYSTEM IS
SUMMARIZED. THE EFFECTS OF RATE OF DEPOSITION;
GLASS CLEANING TECHNIQUES, AND DIFFERENT TYPES OF
GLASS SUBSTRATES ON THE MAGNETIC PROPERTIES OF
VACUUM-DEPOSITED PERMALLOY FILMS WERE STUDIED.
RATES OF DEPOSITION RANGING FROM 15 A/SEC TO 200
A/SEC WERE FOUND TO HAVE NO EFFECT ON H SUB C
AND H SUB K WITHIN THE ERROR OF THE EXPERIMENT.
THE MAGNETOELASTIC STRAIN COEFFICIENT DECREASED
SLIGHTLY WITH INCREASING RATE IN THIS RANGE.
OPTIMUM METHODS OF MAKING ELECTRO-DEPOSITED
PERMALLOY FILMS WERE INVESTIGATED. METHODS WERE
DEVELOPED TO REDUCE THE COMPOSITION VARIATION.
MAGNETIC PROPERTIES OF THE PERMALLOY FILMS MADE ARE
RELATIVELY POOR. BOTH THE ANISOTROPY FIELD AND THE
COERCIVE FIELD ARE RELATIVELY LARGE, AND MAGNETIC
PROPERTIES EXHIBIT A LARGE RANGE OVER AN ARRAY.
OTHER INVESTIGATION CONCERNS: APPARATUS AND
INSTRUMENTATION, MEASUREMENTS, SWITCHING AND
RESONANCE STUDIES, MATHEMATICS AND LOGIC RESEARCH,
AND THE LIGHTNING TEST MACHINE. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

40-243 117

SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS
DIV

PROJECT LIGHTNING. VOLUME I
IV

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *MAGNETIC PROPERTIES, COMPUTER LOGIC, DATA
PROCESSING SYSTEMS, DESIGN, FERROMAGNETIC MATERIALS,
FILMS

IDENTIFIERS: LIGHTNING PROJECT

(U)

(U)

CONTENTS: LIGHTNING TEST MACHINE LOGIC LOGIC
DESIGN OF THE LIGHTNING TEST MACHINE LOGIC
PROGRESS CLOCK FOR JUNE DEMONSTRATION UNIT
LOGIC CIRCUITS LOGIC TEST DEVICE
SATURATING OR-INVERTER LOGIC DRIVER CIRCUIT
CURRENT-STEERING INVESTIGATIONS SINGLE-INVERTER
COUNTER MEMORY CIRCUITS SENSE AMPLIFIERS
LMT SENSE DIGIT LOOP CIRCUIT JUNE DEMONSTRATION
UNIT WORD DRIVER HIGH-SPEED MEMORY SINGLE-BIT
SYSTEM MEMORY STACK DESIGN THEORETICAL
MAGNETIC FILM CORE INVESTIGATIONS OVERLAY
DESIGN PACKAGING INTERCONNECTIONS MODULES
JUNE DEMONSTRATION UNIT

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-264 007

INTERNATIONAL BUSINESS MACHINES CORP Poughkeepsie N Y
PROJECT LIGHTNING (U)

FOR 41 IV

CONTRACT: NGBSR77208

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *COMPUTERS,
*CRYOGENICS, *DATA STORAGE SYSTEMS, *SUPERCONDUCTORS,
CIRCUITS, COMPUTER LOGIC, ELECTRICAL PROPERTIES,
MOLECULAR BEAMS, NUCLEATION, PHYSICAL CHEMISTRY,
SUPERCONDUCTIVITY, SWITCHING CIRCUITS, THERMAL
CONDUCTIVITY, THIN FILMS (STORAGE DEVICES), TRIGGER
CIRCUITS (U)

IDENTIFIERS: LIGHTNING PROJECT (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-264 227

PHILCO NEWPORT BEACH CA IF AERONUTRONIC DIV

A MAGNETIC INTEGRATOR FOR THE PERCEPTRON PROGRAM (U)

SEP 61 IV HAWKINS, J.K. (MUNSEY, C.J.)

STAFFORD, R.A.:

REPT. NO. U 1405

CONTRACT: NONR291200

UNCLASSIFIED REPORT

DESCRIPTORS: *ANALOG COMPUTERS, *COMPUTER LOGIC,
*DIGITAL COMPUTERS, COMPUTER STORAGE DEVICES, DATA
STORAGE SYSTEMS, INSTRUCTION MANUALS, INTEGRATORS,
LEARNING (U)

RESEARCH CONCERNS A SPECIAL-PURPOSE ELECTRONIC
COMPUTER WHICH CAN BE DESCRIBED AS A HYBRID ANALOG-
DIGITAL MACHINE WHOSE ELEMENTS POSSESS CERTAIN LOGIC
AND MEMORY PROPERTIES. THE DIGITAL ELEMENTS OF THE
COMPUTER ARE UNIT-DELAY MEMORY ELEMENTS WHOSE BINARY
OUTPUTS ARE LINEAR-LOGIC THRESHOLD FUNCTIONS OF ITS
INPUTS AND OF ITS ANALOG STORAGE ELEMENTS. THE
ANALOG ELEMENTS ARE STORAGE DEVICES WHOSE VALUES CAN
BE CHANGED BY INCREMENTAL AMOUNTS AS A SPECIAL
FUNCTION OF THE STATES OF THE DIGITAL ELEMENTS AND
(BINARY) INPUTS TO THE COMPUTER. THE MACHINE
WAS CONCEIVED AS A GENERAL-PURPOSE EXTENSION OF THE
PERCEPTRON MODEL. A BASIC FORM OF THE PERCEPTRON
IS A NETWORK CONSISTING OF A FIRST LAYER OF FIXED
LINEAR-LOGIC ELEMENTS, FOLLOWED BY ONE OR MORE LAYERS
OF ADAPTIVE (VARIABLE COEFFICIENT) LINEAR-LOGIC
ELEMENTS. LOGICAL FEEDBACK (CROSS-COUPLING) IS
ACHIEVED BY PERMITTING CONNECTIONS FROM SUBSEQUENT TO
PRIOR LAYERS IN THE NET. THE COMPUTER DESCRIBED
CONSISTS OF 22 BASIC PERCEPTRON ELEMENTS, TOGETHER
WITH APPROPRIATE INPUT AND CONTROL CIRCUITRY. BY
EXTERNAL CONTROL, ANY ONE OR MORE OF THE ELEMENTS MAY
BE MADE EITHER A FIXED LINEAR-LOGIC ELEMENT OR AN
ADAPTIVE ONE. BY MEANS OF PROGRAM BOARD WIRING, ANY
DESIRED NETWORK STRUCTURE CAN BE ARRANGED BY
INTERCONNECTING SUITABLE ELEMENTS. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-264 355

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB
A DISCRETE COMPENSATOR FOR SAMPLED-DATA SYSTEMS USING
MAGNETIC CORES AS STORAGE ELEMENTS (U)

MAY 61 IV LENDARIS, G.G.I

REPT. NO. S60 1256

CONTRACT: AF18 600 1521

MONITOR: AFCSR 1141

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *DELAY LINES, AMPLIFIERS,
COMPUTER STORAGE DEVICES, COMPUTERS, CONTROL SYSTEMS,
DATA STORAGE SYSTEMS, DESIGN, FUNCTIONS, MAGNETIC
CORES, SAMPLING (U)

THE CONSTRUCTION OF A DISCRETE COMPENSATOR TO BE
USED IN A SAMPLED-DATA CONTROL SYSTEM IS DESCRIBED.
THE COMPENSATOR EMPLOYS A DISCRETE DELAY LINE
UTILIZING MAGNETIC CORES TO STORE, IN PULSE-WIDTH-
MODULATED FORM, THE SAMPLED VALUES OF THE SIGNAL.
THIS SYSTEM REQUIRES NO RELAYS OR STEPPING
SWITCHES; EVERYTHING IS SOLID STATE EXCEPT FOR THE
AMPLIFIERS USED IN THE SAMPLE AND HOLD CIRCUITS,
DEMODULATION INTEGRATORS, AND COEFFICIENT
MULTIPLICATION. THIS TAPPED DELAY LINE OPERATES
LIKE A SHIFT REGISTER. A GROUP OF TOROIDAL CORES
WITH COILS WOUND ON THEM ARE CONNECTED IN SERIES.
EACH CORE IS SET TO NEGATIVE SATURATION; THEN A
SIGNAL IS IMPRESSED ONTO THE FIRST CORE IN THE CHAIN
FOR A CERTAIN PERIOD OF TIME. NEXT, A RESET SIGNAL
IS IMPRESSED ONTO THIS FIRST CORE, AND SIMULTANEOUSLY
A SET SIGNAL OF THE SAME AMPLITUDE IS IMPRESSED ONTO
THE SECOND CORE. THUS THE FIRST STEP OF THE
SHIFTING IS ACCOMPLISHED. THIS CAN BE REPEATED AS
OFTEN AS DESIRED, DEPENDING ONLY ON HOW MANY CORES
ARE IN THE CHAIN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-764 436

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

IV

WARBURTON, PETER;

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, *DIODES,
CIRCUITS, CODING, COMPUTER LOGIC, COMPUTER STORAGE
DEVICES, COMPUTERS, COSTS, DATA STORAGE SYSTEMS,
DESIGN, MATHEMATICAL LOGIC, PROGRAMMING (COMPUTERS),
SWITCHING CIRCUITS

(U)

TWO QUESTIONS ARE RAISED ABOUT THE SCOPE OF
PROJECT LIGHTNING STUDIES. ONE QUESTION ASKS
WHY A KILOMEGACYCLE COMPUTER MORE SUITED TO
SCIENTIFIC WORK HAS NOT COME OUT OF THE STUDIES.
THE SECOND QUESTION POSES THE PROBLEM OF TYPING
SEVERAL MACHINES TOGETHER. A SHORT DISCUSSION OF
THESE TWO QUESTIONS IS INCLUDED. ANOTHER PROBLEM
IS DISCUSSED AS TO HOW BEST TO PREPARE FOR COST
ESTIMATING A TUNNEL DIODE COMPUTER. THE
INSTRUCTION REPERTOIRE FOR THE LARGE MACHINE DESIGN
WAS REVISED. ALSO, A FIRST DRAFT OF AN INSTRUCTION
REPERTOIRE FOR A SMALLER, THREEADDRESS MACHINE IS
PRESENTED. WORK WAS BEGUN IN FLOW CHARTING THE
INSTRUCTIONS AND TRIAL PROGRAMMING INPUT-OUTPUT
ROUTINES. (AU, MOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-264 427

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: +DATA PROCESSING SYSTEMS, CIRCUITS,
COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE
SYSTEMS, DESIGN, DIGITAL COMPUTERS, DIODES,
INSTRUMENTATION, RECTIFIERS, SEMICONDUCTORS, SWITCHING
CIRCUITS (U)

INVESTIGATIONS OF SURFACE SENSING OF MAGNETIC FLUX
SWITCHING HAVE CONTINUED BUT THE RESULTS ARE STILL
INCONCLUSIVE. A MAJOR PROBLEM IS EXCESSIVE
COUPLING OF THE SENSE LOOP TO THE DRIVE LINE.
METHODS FOR CANCELLING THIS COUPLING ARE BEING
INVESTIGATED. THE APPLICATION OF A TRANSVERSE
FIELD TO A FERRITE ELEMENT HAS BEEN FOUND TO REDUCE
THE SWITCHING TIME SIGNIFICANTLY WHILE LOWERING THE
OUTPUT VOLTAGE ONLY SLIGHTLY. THE USE OF A
PRECISION MASKING JIG HAS CONTRIBUTED TO CONSIDERABLE
PROGRESS IN THE FABRICATION OF THE CLOSE-SPACED
STRUCTURES REQUIRED FOR HIGH-SPEED OPERATION. A
STUDY OF THE ALLOYING TEMPERATURE EFFECT ON THE
ELECTRICAL CHARACTERISTICS OF 90-MA GE TUNNEL
DIODES SHOWED A SHARP INCREASE OF SPEED RATIO WITH
LOWER ALLOYING TEMPERATURES. THIS APPEARS TO BE
CONSISTENT WITH PREDICTIONS. ELECTROMAGNETIC
DELAYLINE STORAGE TECHNIQUES EMPLOYING BALANCED-PAIR
TUNNEL DIODE LOGIC CIRCUITRY HAVE BEEN INVESTIGATED.
ASSUMING 1-KMC OPERATION OF THE BALANCED-PAIR
CIRCUITS, THE STUDY INDICATES THAT A 1024, 48-BIT
DELAY-LINE MEMORY WITH 16 NS CYCLE TIME WILL REQUIRE
LESS THAN ONE TUNNEL DIODE PER STORED BIT.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-264 439

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA
PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL
COMPUTERS, CIRCUITS COMPUTERS, DESIGN, DIPOLE
ANTENNAS, INSTRUMENTATION, RECTIFIERS, SEMICONDUCTORS,
SWITCHING CIRCUITS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

EFFORTS WERE DIRECTED TOWARD THE GOALS OF REDUCING
TO PRACTICE SEVERAL CIRCUIT APPROACHES. THE CIRCUIT
WORK IS NOW BEING DONE NOT ONLY AT FULL RISE TIME
SPEED BUT AT REPETITION RATES IN THE HUNDREDS OF
MEGACYCLES. AN ATTEMPT TO FIND THE LIMIT OF MEMORY
REGENERATION SPEED FOR AN INDIVIDUAL CELL AND READ-
WRITE AMPLIFIER RESULTED IN READ-WRITE TIMES OF 5
NANOSECONDS. THE LEADING CIRCUIT APPROACHES WERE
SUBMITTED TO INTENSE SCRUTINY FROM THE LOGIC POINT OF
VIEW. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-264 787

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC
PRODUCTS

MICRO-MODULE PRODUCTION PROGRAM

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *MANUFACTURING METHODS,
*SUBMINIATURE ELECTRONIC EQUIPMENT, CERAMIC
CAPACITORS, COILS, COMMUNICATION EQUIPMENT, COMPUTERS,
CONTAINERS, CRYSTAL HOLDERS, CRYSTALS, DESIGN, DIODES,
ELECTROLYTIC CAPACITORS, ELECTRONIC EQUIPMENT,
MATERIALS, PACKAGED CIRCUITS, PRODUCTION, QUARTZ,
RESISTORS, SEMICONDUCTORS, TESTS, THIN FILMS (STORAGE
DEVICES), TRANSISTORS

(U)

IDENTIFIERS: AN/PRC-91, THIN FILMS

(U)

THE REMAINDER OF THE 640 MICRO-MODULES REQUIRED FOR
CONSTRUCTION OF SUBASSEMBLIES AND FOR EVALUATION
TESTS WERE MADE AVAILABLE. PROTOTYPE AND FINAL-
GRADE TRIMMER CAPACITORS RATED AT 1.5-TO-2
MICROMICROFARADS AND -TO-1) MICROMICROFARADS WERE
CONSTRUCTED SUCCESSFULLY. THE FIRST 1000 HOURS OF
A 2000-HOUR LIFE TEST AT 85 C WERE COMPLETED WITH
NO REPORTED FAILURES. ASSEMBLY OF PROTOTYPE
MODULES FOR THE AN/TYK-9 () (MICROPAC)
COMPUTER WAS INITIATED. NEWLY DEVELOPED CERAMIC
TRIMMER CAPACITORS WERE INTRODUCED IN THE AN/PRC-
91 RADIO SET. MICROELEMENT TRANSISTORS IN THE NEW
MINIATURE PACKAGE ARE USED IN ALL MICRO-MODULES.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-266 580

NATIONAL BIOMEDICAL RESEARCH FOUNDATION SILVER SPRING
MD

COLLECTED PAPERS ON SWITCHING CIRCUIT THEORY AND
LOGICAL AND SYSTEMS DESIGN (U)

OCT 61 IV LEDLEY, ROBERT S. BOYLE, DON R. I

WILSON, JAMES A. I

CONTRACT: NONR326500

UNCLASSIFIED REPORT

DESCRIPTORS: *DIGITAL SYSTEMS, *SWITCHING CIRCUITS,
*SYNCHRONIZATION (ELECTRONICS), ALGEBRA, AUTOMATIC,
CIRCUITS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES,
COMPUTERS, CYBERNETICS, DATA STORAGE SYSTEMS, DESIGN,
DIGITAL COMPUTERS, ELECTRICAL NETWORKS, MATHEMATICAL
LOGIC, MATRIX ALGEBRA, MEMORY, PROGRAMMING
(COMPUTERS), PULSE COMMUNICATION SYSTEMS, SEQUENCES,
TABLES, THEORY, TIME, TRANSFORMATIONS
(MATHEMATICS) (U)

CONTENTS: BOOLEAN MATRICES APPLIED TO SEQUENTIAL
CIRCUIT THEORY AND THRESHOLD LOGICS MULTIVALUED
LOGIC DEVICES FOR SIMULATING THRESHOLD NEURONS
ORGANIZATION OF LARGE MEMORY SYSTEMS AN
ALGORITHM FOR RAPID BINARY DIVISION (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-268 812

SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS

DIV

PROJECT LIGHTNING. VOLUME I

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA
PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL
COMPUTERS, *MAGNETIC TAPE, AMPLIFIERS, CIRCUITS,
COMPUTER LOGIC, DESIGN, FERROMAGNETIC MATERIALS,
FILMS, TRANSISTORS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

CONTENTS: HIGH SPEED MEMORY HIGH SPEED
MEMORY STACK DESIGN JUNE DEMONSTRATION UNIT
(JDU) SENSE LINE ARRANGEMENTS SENSE
AMPLIFIERS HIGH LEVEL WORD TRANSLATION SEARCH
MEMORY READ CIRCUITS WRITE CIRCUITS
LOGIC CIRCUITS JDU CLOCKING JDU POWER
TRANSISTOR MEASUREMENTS RCTL CIRCUIT
LOGIC CIRCUIT DESIGN

(U)

UNCLASSIFIED

DDC REPORT UTHLIOGRAPHY SEARCH CONTROL NO. 800296

AD-269 842

CATHOLIC UNIV OF AMERICA WASHINGTON D C
FERROELECTRICS AS A POSSIBLE COMPUTER ELEMENT

(U)

OCT 61 IV PULVARI, CHARLES F. I

CONTRACT: AF33 616 7423

MONITOR: ASD IR61 321

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *DIGITAL COMPUTERS, *FERROELECTRIC MATERIALS,
COMPUTER LOGIC, ELECTRICAL PROPERTIES, HIGH-
TEMPERATURE RESEARCH, NON-DESTRUCTIVE TESTING,
POLARIZATION, SWITCHING CIRCUITS, TESTS

(U)

RESEARCH ON HIGH TEMPERATURE FERROELECTRIC STORAGE
MEDIA LED TO THE DISCOVERY OF A CLASS OF
FERROELECTRIC MATERIALS WHICH REQUIRE A MINIMUM
THRESHOLD FIELD FOR SWITCHING. THIS PROPERTY WAS
HERETOFORE NOT OBSERVED IN ORDINARY FERROELECTRICS
AND COMPARES WITH SIMILAR PROPERTIES FOUND IN FERRITE
CORES. WORK WAS CONDUCTED ESSENTIALLY TO EXPLOIT
THE PHENOMENON OF FERROELECTRICITY FOR APPLICATION IN
COMPUTER LOGICAL DEVICES. THE FEASIBILITY OF
PREPARING CAPACITORS HAVING A FERROELECTRIC AS A
DIELECTRIC WAS INVESTIGATED. LIMITING ELECTRICAL
PARAMETERS OF THE DEVICE WERE DETERMINED. FINALLY,
A LOWEL NON-DESTRUCTIVE READOUT METHOD WAS
INVESTIGATED USING ELECTROMAGNETIC INTERFEROMETER
TECHNIQUES. WITH THE EXPERIMENTAL DEVICE
CONSTRUCTED, THE BEST SIGNAL-TO-NOISE RATIO OBTAINED
WAS 6:1. IT IS POSSIBLE TO OBTAIN MILLIONS OF
READOUTS FROM A FERROELECTRIC CAPACITOR WITHOUT
DESTROYING THE STATE OF POLARIZATION OF THE
FERROELECTRIC CAPACITOR. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-269 496

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *CIRCUITS, *COMPUTERS, *DATA PROCESSING
SYSTEMS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES,
DATA STORAGE SYSTEMS, DIODES, RESEARCH PROGRAM
ADMINISTRATION

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

WORK WAS DIRECTED TOWARD SETTING THE STAGE FOR THE
CONSTRUCTION OF A SUBSYSTEM WHICH WILL DEMONSTRATE
THE FEASIBILITY OF THE TECHNIQUES DEVELOPED DURING
THE PREVIOUS PERIODS. IT WAS DECIDED THAT THE BEST
CHOICE FOR LOGIC CIRCUITRY LAY IN THE D-C DRIVEN
CLASSIFICATION. THE BROAD GROUNDWORK FOR ALL
CONSTRUCTION DECISIONS WAS MADE AND MANY DETAILED
ONES HAVE BEEN FIRMED UP. INDIVIDUAL MONOSTABLE
AMPLIFIERS OF THE TYPE CONSIDERED TO BE THE BACKBONE
OF THE D-C APPROACH HAVE BEEN OPERATED AT REPETITION
RATES AS HIGH AS 940 MC. ALL THE CIRCUIT TYPES TO
BE USED IN THE MEMORY WORK HAVE BEEN OPERATED
INDIVIDUALLY AND MANY HAVE BEEN PROVED BY USE IN THE
NINE-WORD TEST MEMORY. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-269 697

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

IV

WARBURTON, PETER I

UNCLASSIFIED REPORT

DESCRIPTORS: CIRCUITS, COMPUTER LOGIC, COMPUTER
STORAGE DEVICES, COMPUTERS, DATA PROCESSING SYSTEMS,
DATA STORAGE SYSTEMS, DIODES, RESEARCH PROGRAM
ADMINISTRATION

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

APPLICATION OF THE PROCESSOR SYSTEM HAS BEEN
MODIFIED SOMEWHAT IN THAT THE KILOMEGACYCLE COMPUTER
IS TO BE CONSIDERED PART OF A LARGER DATA PROCESSING
SYSTEM AND IS NOT INTENDED PRIMARILY FOR ARITHMETIC
PROBLEMS. THE QUESTION OF CONVENTIONAL VERSUS
UNCONVENTIONAL DESIGN IS DISCUSSED. ANOTHER
BOUNDARY, THAT OF THE EFFECT OF TUNNEL-DIODE
COMPONENTS, HAS BEEN MODIFIED IN THAT THE LOW FAN
POWER OF TUNNEL DIODE CIRCUITS CONFLICTS WITH THE
DESIRE FOR COMPLEX AND SOPHISTICATED LOGIC.
VARIOUS ASPECTS OF INPUT/OUTPUT ARE ALSO DISCUSSED,
AND THE CONTROL SCHEME IS PRESENTED. FINALLY, THE
CHARACTERISTICS OF THREE PROPOSED COMPUTERS (FROM
LARGE TO SMALL) ARE SET FORTH AS A FAMILY OF
DESIGNS. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-271 084

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC
PRODUCTS

FLUX LOGIC PERMALLOY SHEET MEMORY

(U)

IV

BRIGGS, G. R. TORREY, R. D. I

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *DIGITAL COMPUTERS, COMPUTER LOGIC, FILMS,
IRON ALLOYS, MAGNETIC CORES, MANUFACTURING METHODS,
MINIATURE ELECTRONIC EQUIPMENT, NICKEL ALLOYS, SHEETS,
SWITCHING CIRCUITS, TEST EQUIPMENT, TEST SETS (U)

EFFORTS ARE BEING MADE TO DEVELOP THIN
PERMALLOY SHEET MEMORY ARRAYS UTILIZING MULTI-
APERTURED ELEMENTS OPERATED IN THE INHIBITED-FLUX
MODE, AND TO DEVELOP ASSOCIATED MEMORY CIRCUITS.
THE CIRCUITS WILL TAKE ADVANTAGE OF MICROMODULE AND
OTHER MINIATURIZATION TECHNIQUES, AND A SMALL SYSTEM
WILL BE CONSTRUCTED TO DEMONSTRATE THE FEASIBILITY OF
THIS TYPE OF MEMORY. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-272 728

INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y
PROJECT LIGHTNING (U)
IV

UNCLASSIFIED REPORT

DESCRIPTORS: •COMPUTER STORAGE DEVICES, •CRYOGENICS,
•DATA PROCESSING SYSTEMS, •DATA STORAGE SYSTEMS,
•SWITCHING CIRCUITS, CIRCUITS, COMPUTERS, DESIGN,
MATERIALS, MATHEMATICAL LOGIC, MEASUREMENT,
SUPERCONDUCTORS, THERMAL CONDUCTIVITY, THIN FILMS
(STORAGE DEVICES), TRIGGER CIRCUITS (U)
IDENTIFIERS: THIN FILMS, THIN FILMS
ELECTRONICS (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-273 726

INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y
PROJECT LIGHTNING (U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *CRYOGENICS,
*DATA PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS,
*SWITCHING CIRCUITS, CIRCUITS, DESIGN, INDIUM,
MATERIALS, MATHEMATICAL LOGIC, SUPERCONDUCTORS, THIN
FILMS (STORAGE DEVICES), TIN (U)
IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS (U)

GENERAL RESULTS ARE PRESENTED ON THE
CHARACTERISTICS OF TIN AND INDIUM CRYOTRONS
EVAPORATED IN CONVENTIONAL EVAPORATORS WITH NO
SPECIAL TECHNIQUES SUCH AS SUBSTRATE HEATING OR
PRENUCLEATION. INDIUM FROM THE CONVENTIONAL SYSTEM
IS COMPARED WITH FILMS FROM MORE ELABORATE SYSTEMS.
INDIUM FROM THE CONVENTIONAL SYSTEM COMPARED
FAVORABLY WITH THAT PRODUCED IN AN ULTRA-HIGH VACUUM
SYSTEM. REPRODUCIBILITY RESULTS FOR FOUR IN-LINE
CRYOTRONS ON ONE SUBSTRATE INDICATE THAT THE
CRYOTRONS CANNOT BE INTERCONNECTED WITH A SUFFICIENT
MARGIN OF SAFETY ON THE BIAS OR OVERDRIVE ON THE
CONTROL WHEN MAXIMUM OPERATING SPEED IS DESIRED.
THE CRITICAL CURRENTS FOR A NUMBER OF TIN AND
INDIUM FILMS ARE PLOTTED AS A FUNCTION OF THE RATIO
OF FILM THICKNESS TO PENETRATION DEPTH. THE GAIN
CHARACTERISTICS OF UNITY CROSSING CROSSED-FILM
CRYOTRONS ARE DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-272 743

SPEERY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS
DIV

PROJECT LIGHTNING. VOLUME 1.

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 8, VOL. (U)

1, 1 JUN-21 AUG 61 ON PHASE 2.

AUG 61 49P

REPT. NO. PX-1599-5-VOL-1

CONTRACT: NOBSR-77521

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA
PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DIGITAL
COMPUTERS, *MAGNETIC TAPE, AMPLIFIERS, CIRCUITS,
COMPUTER LOGIC, DESIGN, FERROMAGNETIC MATERIALS,
FILMS, THIN FILMS (STORAGE DEVICES), TRANSISTORS (U)

IDENTIFIERS: THIN FILMS, THIN FILMS

ELECTRONICS (U)

CONTENTS: SEARCH MEMORY JDU CLOCKING POWER
SUPPLY SYSTEM FOR THE JDU PACKAGING JDU LOGIC
MODULE TEST FILM SPOT OUTPUT SIGNAL INPUT-OUTPUT
EQUIPMENT FOR THE LYM PHILADELPHIA PROGRESS REPORT (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-273 749

SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS
DIV

PROJECT LIGHTNING. VOLUME II.

(U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 9, VOL.

2, 1 JUN-31 AUG 61 ON PHASE 2.

AUG 61 97P

REPT. NO. PX-1599-5-VOL-2

CONTRACT: NOBSR-77921

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *DIGITAL COMPUTERS, *MAGNETIC CORES,
*MAGNETIC TAPE, *THIN FILMS (STORAGE DEVICES),
COMPUTER LOGIC, DATA PROCESSING SYSTEMS,
ELECTRODEPOSITION, FERROMAGNETIC MATERIALS, GLASS,
MANUFACTURING METHODS, METALLIC SMOKE DEPOSITS,
METALS, PROCESSING

(U)

IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS

(U)

CONTENTS: FILM CORE PROGRAM FILM DEPOSITION
TECHNIQUES APPARATUS AND INSTRUMENTATION FILM
PROPERTY MEASUREMENTS SWITCHING AND RESONANCE
STUDIES APPLICATIONS MATHEMATICS AND LOGIC
RESEARCH IMPROVED GENERAL-PURPOSE LOGIC ARRAY
MAJORITY-LOGIC COMPARATOR MAJORITY-MINORITY
CONVERSION THEOREM LIGHTNING TEST MACHINE HIGH-
SPEED MEMORY STACK DESIGN SENSE AMPLIFIER
HIGH-LEVEL WORD TRANSLATION FILM STRIPS
REPRODUCIBILITY OF ELECTROPLATED THIN FILMS

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-273 783

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
A SOLID STATE BUFFER-MEMORY SYSTEM TO HANDLE RANDOMLY
TRANSMITTED INFORMATION (U)
IV HOROWITZ, RICHARD M. I

UNCLASSIFIED REPORT

DESCRIPTORS: *COMMUNICATION THEORY, *COMPUTER LOGIC,
*COMPUTER STORAGE DEVICES, *DATA PROCESSING SYSTEMS,
*DATA STORAGE SYSTEMS, ANALYSIS, CODING, COMPUTERS,
DATA TRANSMISSION SYSTEMS, ERRORS, MAGNETIC TAPE,
PROBABILITY, SEQUENCES, SWITCHING CIRCUITS, TIME
INTERVAL COUNTERS (U)

THE DIGITAL DATA HANDLING SECTION IN A WEST
FORD RECEIVER SYSTEM PERFORMS THE SPECIFIC
FUNCTIONS OF TEMPORARILY STORING AND THEN
TRANSFERRING ERROR AND CERTAIN SPECIAL DATA TO A HIGH
SPEED MAGNETIC TAPE UNIT FOR ULTIMATE COMPUTER DATA
PROCESSING. A FIXED 16-BIT BINARY WORD IS
REPEATEDLY TRANSMITTED OVER THE DIPOLE CHANNEL. THE
RETURNING BITS OF INFORMATION ARE SEQUENTIALLY
COMPARED FOR ERRORS WITH REPRODUCTIONS OF THE
TRANSMITTED WORD. DISCREPANCIES BETWEEN THE
TRANSMITTED AND RECEIVED BITS THUS DERIVED BY
COMPARISON ARE ASSEMBLED FOR SUBSEQUENT STORAGE AND
RECORDING. IN ADDITION TO THE ERROR WORD JUST
MENTIONED, THREE OTHER WORD TYPES --PARAMETER,
MEASUREMENT AND RADAR, EACH CONTAINING 96 BITS OF
INFORMATION PERTINENT TO OTHER ASPECTS OF THE
COMMUNICATION EXPERIMENT, ARE ALSO ASSEMBLED FOR
PROCESSING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-274 177

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER LOGIC, *COMPUTER STORAGE
DEVICES, *DATA STORAGE SYSTEMS, *DIODES, *GATES
(CIRCUITS), DELAY CIRCUITS, DIGITAL COMPUTERS,
PROGRAMMING (COMPUTERS), TRANSISTORS
IDENTIFIERS: LIGHTNING PROJECT

(U)

(U)

THE QUARTER'S WORK CONCENTRATED UPON COMPLETING THE
FROZEN DESIGNS, BOTH ELECTRICAL AND MECHANICAL, AND
BEGINNING CONSTRUCTION OF THE SUBSYSTEM. TO BE
COMPLETED DURING PHASE III B, THIS SUBSYSTEM WILL
DEMONSTRATE FEASIBILITY OF THE TECHNIQUES DEVELOPED
DURING THE COURSE OF PROJECT LIGHTNING. THE
WORST-CASE DESIGNS OF THE LOGIC SUBSYSTEM WERE
FINALIZED, AND ALL TYPES OF WAFERS WERE CONSTRUCTED
AND TESTED. PERFORMANCE OF THESE WAFERS WAS
ESSENTIALLY IN AGREEMENT WITH ANALYTIC CALCULATIONS.
IT IS BELIEVED THAT THE SUBSYSTEM CAN BE BUILT WITH
NO FURTHER KEY INVENTION REQUIRED. (AUTHOR)

(U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-275 169

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC
PRODUCTS

MICRO-MODULE PRODUCTION PROGRAM

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: •MANUFACTURING METHODS,
•MICROMINIATURIZATION (ELECTRONICS), CAPACITORS,
CIRCUITS, COILS, COMPUTER STORAGE DEVICES, CRYSTALS,
DATA STORAGE SYSTEMS, DIGITAL COMPUTERS, DIODES,
ELECTRONIC EQUIPMENT, ENCAPSULATION, LIFE EXPECTANCY,
PRODUCTION, RELIABILITY, RESEARCH PROGRAM
ADMINISTRATION, RESISTORS, SEMICONDUCTORS, SWITCHING
CIRCUITS, TRANSFORMERS, TRANSISTORS

(U)

IDENTIFIERS: AN/PRC-51

(U)

THE INITIAL PROGRAM TO ESTABLISH FEASIBILITY AND
RELIABILITY OF MICRO-MODULES OF A LIMITED RANGE AND
SELECTION OF MICROELEMENTS WAS COMPLETED. EFFORT
WAS CONTINUED TO IMPROVE AND EXTEND INDUCTOR
PARAMETERS, TO DEVELOP CERAMIC TRIMMER CAPACITORS
WHICH MEET THE REQUIREMENTS OF COMMUNICATION MICRO-
MODULES, AND TO IMPROVE PROCESSES FOR MAKING MICRO-
MODULES. ALL WORK ON MICRO-MODULE ASSEMBLY WAS
COMPLETED. PROTOTYPE PULSE TRANSFORMERS WERE
PLACED ON LIFE TEST. A 455 KC INDUCTOR WAS
DESIGNED ON A POWDERED IRON CORE AND TESTING OF THE
UNIT WAS INITIATED. IN THE OBJECTIVE TO DESIGN AND
BUILD TRANSMITTER AND RECEIVER MICRO-MODULES FOR
RADIO SET AN/PRC-51 AND MICRO-MODULES FOR THE
MICROPAC COMPUTER, 93 OF THE REQUIRED 96 MICRO-
MODULES WERE DELIVERED. THREE ENGINEERING MODELS OF
THE TRANSMITTER, AND ONE MODEL OF THE RECEIVER, OF
THE AN/PRC-51 RADIO SET WERE TESTED. A
BREADBOARD MODEL OF A MICROPAC COMPUTER WITH A
TEMPERATURE CONTROL SYSTEM INCLUDING A THERMOELECTRIC
COOLING SYSTEM WAS FABRICATED AND TESTED.

(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800996

AD-279 910

REMINGTON RAND UNIVAC DIV SPERRY RAND CORP PHILADELPHIA
PA

THE PREPARATION AND CHARACTERISTICS OF THIN

FERROMAGNETIC FILMS

(U)

IV

MATHIAS, JOSEPH S. FREITAG, WALTER

KRIESSMAN, CHARLES J.

REPT. NO. 970

CONTRACT: AF19 604 4978

MONITOR: AFRL 970

UNCLASSIFIED REPORT

DESCRIPTORS: *FERROMAGNETIC MATERIALS; *THIN FILMS
(STORAGE DEVICES); ACETYL RADICALS; COMPUTER STORAGE
DEVICES; COMPUTERS; DATA STORAGE SYSTEMS;
DECOMPOSITION; ELECTRODEPOSITION; ELECTROPLATING;
FILMS; IRON; IRON COMPOUNDS; MAGNETIC PROPERTIES;
MANUFACTURING METHODS; METALLIC SMOKE DEPOSITS;
METALORGANIC COMPOUNDS; NICKEL; NICKEL COMPOUNDS;
SOLUTIONS; SULFATES; VAPOR PLATING

(U)

INVESTIGATIONS INDICATE THAT THE THERMAL
DECOMPOSITION OF ACETYLACETONATES IS NOT A FEASIBLE
METHOD FOR PRODUCING FE-NI THIN FILMS BECAUSE THE
NI ACETYLACETONATE DECOMPOSES AND POLYMERIZES,
GREATLY REDUCING VAPOR PRESSURE. THIN FE FILMS
CAN BE EASILY FORMED BY THIS PROCESS. THERMAL
DECOMPOSITION OF CARBONYL VAPORS OF NI AND FE
PRODUCE MAGNETIC FE-NI FILMS WHICH USUALLY HAVE
HIGH COERCIVITY. HOWEVER, ANNEALING THESE FILMS IN
WET H LOWERS THE COERCIVITY AND PRODUCES FILMS THAT
CAN BE USED FOR COMPUTER ELEMENTS. SOME UNUSUAL
EFFECTS, TERMED VARIABLE-THRESHOLD PROPERTIES, WERE
NOTED IN FILMS PREPARED BY THIS METHOD. THE
REPRODUCIBILITY OF FILMS HAVING THESE PROPERTIES IS
POOR. ELECTRODEPOSITION OF THIN MAGNETIC FILMS
FROM AQUEOUS SOLUTION OF NI AND FE SULFATES
PROVED TO BE THE MOST USEFUL AND REPRODUCIBLE
TECHNIQUE. FILMS HAVING A THICKNESS OF 1000
ANGSTROMS CAN BE PRODUCED WITH A COERCIVE FORCE OF
2.2 OERSTEDS, AND AN ANISOTROPY FIELD OF 4 OERSTEDS.
THESE FILMS, WHICH SWITCH IN A ROTATABLE MODE UNDER
THE INFLUENCE OF A DRIVE FIELD AND CROSS FIELD, WERE
USED SUCCESSFULLY AS COMPUTER MEMORY ELEMENTS.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-276 229

ROME AIR DEVELOPMENT CENTER GRIFFISS AFB NY
THEORY OF A MULTIPLE TAPE QUEUING SYSTEM AND ITS
APPLICATION TO ELECTRONIC SYSTEMS (U)
IV MORENOFF, EDWARD; MCLEAN, JOHN B. I

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA STORAGE SYSTEMS, *MAGNETIC TAPE,
DATA PROCESSING SYSTEMS, PROBABILITY (U)

A STORAGE TECHNIQUE KNOWN AS RAPTAP (RAPID ACCESS PARALLEL TAPE) WAS CONCEIVED AT RADC IN AN EFFORT TO PROVIDE A STORAGE MEDIUM WHICH HAS BOTH A GREATLY REDUCED ACCESS TIME TO DESIRED DATA AND ECONOMY OF OPERATION. THESE OBJECTIVES ARE SATISFIED BY A RAPTAP INNOVATION WHICH RESULTS IN THE ABILITY TO SIMULTANEOUSLY MOVE ALL TAPE UNITS UNDER THE CONTROL OF A SINGLE TAPE CONTROL UNIT, AND IN THE ABILITY TO MOVE MAGNETIC TAPE AT RAPID REWIND TAPE SPEEDS OVER SECTIONS OF TAPE KNOWN NOT TO CONTAIN DESIRED DATA, RATHER THAN AT THE NORMAL SLOWER SEARCH SPEEDS. THE SELECTION AND RETRIEVAL OF DATA FROM THE RAPTAP STORAGE SYSTEM IS DIRECTLY ANALOGOUS TO THE SELECTION OF DATA FROM DISC FILE SYSTEMS. THE RAPTAP TECHNIQUE IS DESCRIBED IN THIS REPORT, AND THE ECONOMY OF OPERATION AND THE REDUCTION OF ACCESS TIME TO DESIRED DATA ARE CONSIDERED IN TERMS OF THE FOLLOWING MODES OF QUERYING AN ORDERED ARRAY OF DATA: (1) RANDOM QUERIES; (2) BATCHED QUERIES; AND (3) INDEPENDENT GROUPS OF RANDOM QUERIES, EACH GROUP CONTAINING RELATED SUBQUERIES. A NEW MEANS OF ORGANIZING THE ORDERED ARRAYS OF DATA IS DESCRIBED WHICH PROVIDES FOR IMPROVED SEARCHES OF THE QUERIES, DESCRIBED IN (2) ABOVE, BY CAPITALIZING ON A UNIQUE CHARACTERISTIC OF THE RAPTAP SYSTEM.
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-282 816

BURROUGHS CORP PHILADELPHIA PA
MAGNETIC PARAMETRON LOGIC ELEMENTS (U)
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 1. 1 APR*
30 JUN 62,
JUN 62 1V EINHORN, S.N. POWELL, W.S.1
CONTRACT: DA26 029SC09204
PROJ: 3A99-15-001-03

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER LOGIC, *DIGITAL COMPUTERS,
*MICROMETERS, MAGNETIC TAPE, PRINTED CIRCUITS, THIN (U)
FILMS (STORAGE DEVICES)
IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS, (U)
PARAMETRONS

RESEARCH IS BEING DIRECTED TOWARD THE DEVELOPMENT OF ADVANCED PARAMETRON ELEMENTS, CONFIGURATIONS, CIRCUIT ARRANGEMENTS, AND MODES OF OPERATION SUITED TO PERFORM LOGIC FUNCTIONS IN DATA PROCESSING SUB-SYSTEMS. EMPHASIS IS PLACED ON THE REALIZATION OF RELIABLE MAGNETIC-FILM PARAMETRONS WHICH LEND THEMSELVES TO LARGE SCALE PRODUCTION AT LOW COST. A PART OF THE PARAMETRON DESIGN EFFORT WAS A STUDY OF DEMAGNETIZING FIELDS, WHICH POINTS TO THE FEASIBILITY OF SMALL COILS WITH 2 BY 2 MM FILM ELEMENTS. INDUCTANCE MEASUREMENTS AND OPERATIONAL TESTS OF PARAMETRON COILS HAVE, SO FAR, LED TO AN OPTIMUM DESIGN HAVING 34 TURNS OF NO. 44 WIRE. HOWEVER, AN EFFORT IS UNDERWAY TO REDUCE THE NUMBER OF TURNS, SINCE THE CAPACITANCE REQUIRED FOR RESONANCE AT THE 25-MC SIGNAL FREQUENCY IS SMALL COMPARED TO THE ESTIMATED WIRING CAPACITANCE. A MODEL INCORPORATING PROPOSED PACKAGING TECHNIQUES WAS CONSTRUCTED. THE TECHNIQUES INCLUDE A PRINTED CIRCUIT BOARD FOR LOGIC INTERCONNECTIONS, A GROUND PLANE WHICH BOTH COMPLETES THE LOGIC SIGNAL PATHS AND SHIELDS THE SIGNAL CIRCUITS FROM THE PUMP FIELDS, AND A MINIATURE PRINTED CIRCUIT PARAMETRON COMPONENT BOARD. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-284 290

CALIFORNIA UNIV BERKELEY INST OF ENGINEERING
RESEARCH
A SPIN-ECHO MEMORY FOR A CARRIER TYPE DIGITAL
COMPUTER

(U)

IV

WANLASS, L.K. I

REPT. NO. S6D 17992767

CONTRACT: AF49 628 102

MONITOR: AFOSR 2767

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, BARIUM COMPOUNDS, CALCITE, CRYOGENICS,
DIGITAL COMPUTERS, NUCLEAR SPINS, OSCILLATORS, RUBY,
SILICON, SULFATES

(U)

ELECTRON SPIN-ECHO WAS STUDIED AS A POSSIBLE
CARRIER DIGITAL COMPUTER MEMORY ELEMENT AT MICROWAVE
FREQUENCIES. A GENERAL STUDY IS MADE OF SOLID
STATE PARAMAGNETIC CRYSTALS AS POSSIBLE STORAGE
MATERIALS. SPIN-SPIN AND SPIN-LATTICE RELAXATION
TIMES ARE CONSIDERED IN GENERAL, AND WERE MEASURED
FOR CALCITE, SILICON, AND OTHER CRYSTALS. A STUDY
WAS MADE OF CROSS-RELAXATION IN CALCITE USING A
STIMULATED SPIN-ECHO TECHNIQUE. A DECREASE IN THE
POTENTIAL STORAGE TIME OF THIS CRYSTAL BY A FACTOR OF
8000 IS REPORTED DUE TO THIS RELAXATION MECHANISM.
DETAILED MEASUREMENTS WERE MADE ON THE SPINECHO
SIGNALS OBTAINABLE AT MICROWAVE FREQUENCIES, AND
USABLE AMPLITUDE ECHOES ARE REPORTED FOR MANY
CRYSTALS AND IMPURITY CONCENTRATIONS. A STUDY OF
NOISE SOURCES AND SIGNAL TO NOISE RATIOS WAS MADE.
AN ORIGINAL SYSTEM FOR STORING THE PHASE OF PHASE
SCRIPT INFORMATION PULSES WAS INVESTIGATED. A
COMPLETE CARRIER COMPUTER REGENERATIVE MEMORY SYSTEM
USING TWO SPIN-ECHO DEVICES AND A SINGLE CONNECTING
CHANNEL WAS CONSIDERED. THE STORAGE CAPACITY OF
THE MEMORY DEVICE WAS THEORETICALLY DETERMINED.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-284 972

MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS
LAB

SOME ASPECTS OF THE STATE ASSIGNMENT PROBLEM FOR
SEQUENTIAL CIRCUITS

(U)

SEP 62 IV HARING, DONALD RUSSELL

REPT. NO. R 147

CONTRACT: AF22 616 7700

UNCLASSIFIED REPORT

DESCRIPTORS: *SWITCHING CIRCUITS, CODING, COMPUTER
LOGIC, COMPUTER STORAGE DEVICES, COMPUTERS, DATA
STORAGE SYSTEMS, DIGITAL SYSTEMS, SYNTHESIS

(U)

ONE OF THE MAJOR STEPS IN THE SYNTHESIS OF
SWITCHING CIRCUITS CONTAINING MEMORY IS THE BINARY
CODING OF THE INTERNAL STATES. THE CHOICE OF CODE,
CALLED THE STATE ASSIGNMENT, STRONGLY AFFECTS THE
COMPLEXITY OF THE CIRCUIT REALIZATION. HENCE, THE
OBJECTIVE IS TO FIND, FOR A GIVEN SEQUENTIAL MACHINE
(SM) AS TYPICALLY SPECIFIED BY A FLOW TABLE AND AN
OUTPUT TABLE, THAT STATE ASSIGNMENT (SA) WHICH
MINIMIZES THE SEQUENTIAL CIRCUIT (SC) COMPLEXITY.
THE POINT OF VIEW IS TAKEN THAT THE GREATEST LACK
IN PROMOTING AN UNDERSTANDING OF THE SA PROBLEM IS
A KNOWLEDGE OF THE STRUCTURE OF THE RELATIONSHIP
BETWEEN THE PROPERTIES OF THE SM AND THE PROPERTIES
OF THE LOGIC REQUIRED BY ITS SC REALIZATION.
CONSEQUENTLY, A LARGE PART OF THIS REPORT IS
DEVOTED TO DEVELOPING AND USING SOME NEW TECHNIQUES
FOR STUDYING THE STRUCTURE OF THIS SM-SC
RELATIONSHIP. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-289 686

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AERONAUTICAL
ELECTRONIC AND ELECTRICAL LAB
APPLICATION OF THIN MAGNETIC FILMS TO COMPUTER
TECHNOLOGY (U)

AUG 62

1V

HORN, ROBERT W. I

REPT. NO. 6222

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERS, *MAGNETIC TAPE, *METAL
FILMS, *THIN FILMS (STORAGE DEVICES), COMPUTER STORAGE
DEVICES, DATA PROCESSING SYSTEMS, DATA STORAGE
SYSTEMS, IRON ALLOYS, MAGNETIC MATERIALS, NAVAL
AIRCRAFT, NICKEL ALLOYS (U)
IDENTIFIERS: THIN FILMS (M)

THE APPLICATION OF THIN MAGNETIC FILMS TO COMPUTER
TECHNOLOGY IS DISCUSSED. PERMALLOY FILMS, THIN FILMS, AND
MEMORY SYSTEMS. TECHNICAL INFORMATION FOR NAVAL
AIRBORNE DATA PROCESSING SYSTEMS.

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-292 172

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

THE FK-1 MAGNETIC FILM MEMORY

IV

RAFFEL, J. I. ANDERSON, A. H. I

(U)

REPT. NO. TR278TOR62 250

CONTRACT: AF19 628 500

MONITOR: E50 TOR62 250

UNCLASSIFIED REPORT

DESCRIPTORS: *MAGNETIC RECORDING SYSTEMS, COMPUTERS,
DIGITAL SYSTEMS, MAINTENANCE, RELIABILITY, THIN FILMS
(STORAGE DEVICES)

(U)

IDENTIFIERS: THIN FILMS, THIN FILMS
ELECTRONICS

(M)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-292 241

ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y

TAPE ADAPTATION AND CONTROL UNIT

IV MUOIO, A.W.:

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, *DATA STORAGE
SYSTEMS, *DIGITAL RECORDING SYSTEMS, *MAGNETIC
RECORDING SYSTEMS, DIGITAL COMPUTERS, MAGNETIC TAPE,
PROGRAMMING (COMPUTERS), RESEARCH PROGRAM

ADMINISTRATION

(U)

IDENTIFIERS: PERV

(U)

THE TAPE ADAPTATION AND CONTROL UNIT PROVIDES THE
NECESSARY LOGIC AND CONTROL CIRCUITRY TO PERMIT A
COMPUTER TO CONTROL AND TRANSFER DATA TO ANY ONE OF
EIGHT MAGNETIC TAPE STATIONS. THREE TYPES OF
MAGNETIC TAPE STATIONS MAY BE USED. COMPUTER
INPUT-OUTPUT TRANSFER TIME MAY BE MINIMIZED BY THE
FUTURE MODULAR ADDITION OF A MAGNETIC CORE BUFFER.
THIS REPORT PRESENTS A DETAILED NARRATIVE OF THE
ANALYSIS AND DESIGN WORK PERFORMED ON THE FIRST PHASE
OF THE TACU PROGRAM; NAMELY, THE DESIGN PHASE.
THE INTRODUCTION CONTAINS A DESCRIPTION OF THE
TACU PROGRAM, A GENERAL BACKGROUND OF THE PROBLEM,
AND A BREAKDOWN OF THE DESIGN PHASE INTO THE VARIOUS
SUB-TASKS. THE DISCUSSION CONTAINS THE SYSTEM
ANALYSIS, SYSTEM AND LOGICAL DESIGN, CIRCUIT DESIGN,
MECHANICAL DESIGN, POWER SUPPLY DESIGN, RELIABILITY,
MAINTAINABILITY, AND ERROR DETECTION AND CORRECTION
OF TACU. A PERT CHART ILLUSTRATES THE MAJOR SUB-
TASKS AND THEIR INTERRELATIONSHIPS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000296

AD-295 405

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC
PRODUCTS
PROJECT LIGHTNING (U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA
PROCESSING SYSTEMS, *DATA STORAGE SYSTEMS, *DATA
TRANSMISSION SYSTEMS, CONFIGURATION, CONTROL SYSTEMS,
COOLING, DESIGN, PERSONNEL, POWER SUPPLIES,
RELIABILITY, SWITCHING CIRCUITS, TIME DELAY RELAYS,
TIMING CIRCUITS (U)

IDENTIFIERS: LIGHTNING PROJECT (U)

THE FABRICATION, DESIGN, AND DEVELOPMENT OF LOGIC
AND MEMORY SUBSYSTEMS FOR USE IN HIGH SPEED DATA
PROCESSING SYSTEMS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AO-295 822

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
A SHIFT REGISTER-DECODER

(U)

JAN 62 IV MARTYNOV, YE.M.I

REPT. NO. TT 62 1436

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, *FREQUENCY SHIFT CONVERTERS, CIRCUITS,
COMPUTERS, MAGNETIC CORES, TRANSISTORS

(U)

IDENTIFIERS: USSR

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AC-298 149

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
UTILITY SYSTEM PROGRAMMING PROPOSALS. A TWO TAPE
SYSTEM FOR COPII

(U)

PER 2 IV PRUETT, BILLIE R. I

REPT. NO. TM 890 006 00

CONTRACT: AF19 628 1648

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, COMPUTERS,
INPUT-OUTPUT DEVICES, PROGRAMMING (COMPUTERS)

(U)

PROPOSAL FOR A TWO TAPE SYSTEM FOR COPII COMPUTER.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-299 007

AMERICAN OPTICAL CO SOUTHBRIDGE MASS
STUDY OF OPTICAL FIBER TECHNIQUES FOR DATA
PROCESSING

(U)

AUG 62 IV KOESTER, CHARLES J. I
CONTRACT: AF30 602 2440

UNCLASSIFIED REPORT

DESCRIPTORS: *FIBER OPTICS, *LASERS, *PHOSPHORESCENT
MATERIALS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES,
COMPUTERS, DATA PROCESSING SYSTEMS, DATA STORAGE
SYSTEMS, DIODES, ELECTRONIC SWITCHES, FLUORESCENCE,
INFRARED OPTICAL MATERIALS, MAGNETO-OPTIC EFFECT,
NEODYMIUM, REFRACTIVE INDEX, RUBY, SILICON
IDENTIFIERS: NEURISTORS

(U)

(U)

STUDY OF OPTICAL FIBER TECHNIQUES FOR DATA PROCESSING.
LASER SWITCHING EXPERIMENTS. FARADAY AND KEN EFFECT
EXPERIMENTS. PHOSPHOR AND DETECTOR STUDIES. NEURISTOR
LASER ANALYSIS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-401 450

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
INFORMATION FOR COP USERS DBB CARD READ AND P22 CARD
PUNCH CAPABILITY (U)

MAR 63 IV TABER, W.E. I

REPT. NO. TM092 004 00

CONTRACT: AF19 620 1640

UNCLASSIFIED REPORT

DESCRIPTORS: *DATA PROCESSING SYSTEMS, COMPATIBILITY,
INPUT-OUTPUT DEVICES, PROGRAMMING (COMPUTERS), PUNCHED
CARDS (U)

CARD READ AND CARD PUNCH CAPABILITY AND COMPATIBILITY.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-401 644

BENDIX CORP TETERBORD N J ECLIPSE-PIONEER DIV
HIGH DENSITY OPTICAL MEMORY DRUM

(U)

FEB 67 1V LEE, W.W.1

CONTRACT: AF33 616 7999

MONITOR: ASD TOR42 791

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *DATA STORAGE
SYSTEMS, DENSITY, DESIGN, DIGITAL COMPUTERS, FIBER
OPTICS, MANUFACTURING METHODS, MICROMINIATURIZATION
(ELECTRONICS), OPTICAL COATINGS, OPTICAL EQUIPMENT
COMPONENTS, PHOTOGRAPHIC IMAGES

(U)

HIGH-DENSITY OPTICAL MEMORY DRUM.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-402 125

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC
PRODUCTS

A TELETYPEWRITER ADAPTER UNIT FOR THE DRISROTE
APERTURED PLATE MEMORY

(U)

1V

CONTRACT: AF33 657 7905

MONITOR: ASD TOR42 1098

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTER STORAGE DEVICES, *TELETYPE
SYSTEMS, COMPUTER LOGIC, DATA PROCESSING SYSTEMS,
INPUT-OUTPUT DEVICES, SWITCHING CIRCUITS, TIMING
CIRCUITS

(U)

A TELETYPEWRITER ADAPTER UNIT FOR THE DRISROTE APERTURED
PLATE MEMORY.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000396

AD-407 504

JOINT PUBLICATIONS RESEARCH SERVICE WASHINGTON D C
SEMICONDUCTOR DEVICES IN COMPUTER ENGINEERING. (U)
FEB 62 36P LUBENNIKAVA, I. L. I
KARACHANTSAYA, N. YA. I

UNCLASSIFIED REPORT

NOTICE: ALSO FROM OTS FOR \$1.00 AS REPT. 62-
11124.

SUPPLEMENTARY NOTE: TRANS. OF AKADEMIYA NAVUK BSSR,
MINSK. VESTSI. SERIYA FIZIKA+TEKHNICHNYKH NAVUK,
1961. NO. 1. P. 59-74.

DESCRIPTORS: *DIGITAL COMPUTERS, COMPUTERS,
*SEMICONDUCTOR DEVICES, COMPUTER STORAGE DEVICES,
SWITCHING CIRCUITS, TRIGGER CIRCUITS, PUNCHED TAPE,
TRIODES, DESIGN, INPUT-OUTPUT DEVICES (U)

SEMICONDUCTOR DEVICES IN COMPUTER ENGINEERING.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-406 060

CBS LABS STAMFORD CONN
FEASIBILITY STUDY FOR A THIN FILM MEMORY
SYSTEM.

(U)

DESCRIPTIVE NOTE: FINAL

MAY 63 20P

CONTRACT: NOBSR87214

PROJ: SF007 01 01

TASK: 7121

UNCLASSIFIED REPORT

DESCRIPTORS: •THIN FILMS (STORAGE DEVICES),
•COMPUTER LOGIC, NICKEL ALLOYS, IRON ALLOYS,
COBALT ALLOYS, SWITCHING CIRCUITS, FEASIBILITY
STUDIES, TIMING CIRCUITS, DIGITAL COMPUTERS,
CIRCUITS.

(U)

IDENTIFIERS: TORISTOR, THIN FILMS, THIN FILMS
ELECTRONICS

(U)

THE OBJECT OF THIS PROJECT IS TO DESIGN AND DEVELOP A FEASIBILITY TEST MODEL OF A SMALL, THIN FILM DIGITAL MEMORY. THE MODEL IS TO BE A 4 WORD, 2 BITS/WORD, NONDESTRUCTIVE, LINEAR SELECT MEMORY. READOUT AND WRITE-IN IS TO BE IN PARALLEL AT A CLOCK FREQUENCY OF 5 MC, AND ADDRESSING WAS TO BE SEQUENTIAL. THE MEMORY ELEMENT TO BE USED IS THE TOROIDAL THIN FILM NI-Fe-CO "TORISTOR".

THE TORISTOR IS A THIN FILM NI-Fe-CO CYLINDER WHICH HAS BEEN PLATED ON EITHER A GLASS CAPILLARY TUBE OR A STAINLESS STEEL HYPODERMIC TUBE. THOUGH ITS SWITCHING CHARACTERISTICS ARE SIMILAR TO THE PLANAR DOT MEMORY ELEMENT, IT OFFERS THE FOLLOWING ADVANTAGES: (1) A MUCH LARGER OUTPUT SIGNAL; (2) NONDESTRUCTIVE READ CHARACTERISTICS; (3) RELATIVE FREEDOM FROM THE DESTRUCTIVE EFFECT OF STRONG MAGNETIC FIELD. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-418 715

SERVO CORP OF AMERICA LINDENHURST N Y
MICROELECTRONIC CIRCUITRY IN MICRO-MODULES.

(U)

DESCRIPTIVE NOTE: FINAL RPT., 1 JUNE 61-8 OCT 62,
OCT 62 IV WEBER, H. WELD, S. I

PETER TYL, S. I PUTZ, AND R. I

CONTRACT: DA36 029SC87216

TASK: JA99 15 002 02

UNCLASSIFIED REPORT

DESCRIPTORS: (*MOLECULAR ELECTRONICS, MANU
FACTURING METHODS), MODULES (ELECTRONIC),
RELAXATION OSCILLATORS, GATES (CIRCUITS),
SWITCHING CIRCUITS, SEMICONDUCTOR DEVICES,
VAPOR PLATING, RESISTORS, CAPACITORS,
BONDING.

(U)

IDENTIFIERS: GLASS SUBSTRATES, SHIFT REGISTERS,
1962.

(U)

THIS REPORT DESCRIBES THE STEPS UNDERTAKEN IN THE
MICROMINIATURIZATION OF SIGNAL CORPS MODULES USED
IN A SUBASSEMBLY PREVIOUSLY MANUFACTURED FROM
STANDARD COMPONENTS. THIS SUBASSEMBLY IS A SHIFT
REGISTER CONSISTING OF 28 FLIP-FLOPS, ONE 4-GATE
NETWORKS, AND THREE DRIVER CIRCUITS. FOR EACH TYPE
OF CIRCUIT, A TYPICAL LAYOUT EVERY FILM IS SHOWN AT
10X SCALE. FOR THE FIRST CONDUCTOR FILM ON THE
FLIP-FLOP CIRCUITS, THE COMPLETE 16 POSITION MASK IS
SHOWN IN FULL SCALE. A DESCRIPTION OF THE MATERIAL
USED, THE THICKNESS, AND THE FUNCTIONS OF EACH FILM
IS GIVEN, TOGETHER WITH THE METHOD OF MONITORING
DURING DEPOSITION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-419 553

IBM WATSON RESEARCH CENTER YORKTOWN HEIGHTS N Y
APPLIED RESEARCH PROGRAM AEROSPACE INTELLIGENCE
DATA SYSTEM (AIDS), VOLUME 11 - CONSOLES.

(U)

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 4.

SEP 62 28P

CONTRACT: AF19 626 10

UNCLASSIFIED REPORT

DESCRIPTORS: (•DATA PROCESSING SYSTEMS,
COMPUTERS), TRANSDUCERS, DISPLAY SYSTEMS,
PROGRAMMING:COMPUTERS), COMPUTER LOGIC, INPUT-
OUTPUT DEVICES, HUMAN ENGINEERING, DESIGN

(U)

IDENTIFIERS: 1962.

(U)

SOME GENERAL CHARACTERISTICS OF CONSOLES WHEN USED
AS TRANSDUCERS BETWEEN HUMAN BEINGS AND INFORMATION
PROCESSING DEVICES ARE REVIEWED. TEST OF A
SPECIFIC CONSOLE DESIGNED FOR INDEPENDENT "OFF
LINE" USE, THE DATACOM MODEL 408-2 IS
DESCRIBED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-420 261

RAND CORP SANTA MONICA CALIF

A GENERAL VIEWPOINT ON SHIFT-REGISTER SEQUENCES, (U)

OCT 63 19P REED, I. S. I

REPT. NO. RM2874PR

CONTRACT: AF49 638 700

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER LOGIC, CIRCUITS) (*RELAXATION
OSCILLATORS, COMPUTER LOGIC), DESIGN, DIGITAL
COMPUTERS, COMMUNICATION SYSTEMS, DIGITAL SYSTEMS,
SYNTHESIS, SEQUENCES, COMPUTER STORAGE DEVICES, DELAY
LINES, DIFFERENCE EQUATIONS (U)
IDENTIFIERS: 1963, SHIFT REGISTERS, SEQUENCE
GENERATORS (U)

THE SHIFT-REGISTER COUNTER IS A DEVICE COMPRISED OF
A SMALL NUMBER OF DIGITAL FLIP-FLOPS INTERCONNECTED
TO EMIT A LONG, PREDETERMINED, NONREPEATING SERIES OF
BINARY BITS. THE THEORY OF THEIR DESIGN IS
EXAMINED, CONCENTRATING ON THE SYNTHESIS OF COUNTERS
ABLE TO CREATE EXTREMELY LONG SEQUENCES BY
SEQUENTIALLY MODIFYING THE EFFECTIVE CONNECTIONS ON
OPERATORS IN THE FEEDBACK LOOPS. NON-LINEAR SHIFT-
REGISTERS ARE EXAMINED FROM SEVERAL DIFFERENT POINTS
OF VIEW, AND THEN THE INSIGHT SO AFFORDED IS APPLIED
TO GENERALIZE UPON THE POSSIBLE DIRECTIONS WHICH
MIGHT YIELD MAXIMAL LENGTH SEQUENCES WITH A MINIMUM
OF EQUIPMENT. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-423 822

ILLINOIS UNIV URBANA ENGINEERING EXPERIMENT STATION
MULTIPLEXING SPECIAL PURPOSE ACCESSORIES TO A DIGITAL
COMPUTER, (U)

SEP 63 21P PURI, V. K. I

REPT. NO. RRL218 ,TR21

CONTRACT: NONR1824 02 ,NOBSR89229

PROJ: NR371 161

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS, MULTIPLEX),
(*MULTIPLEX, INPUT-OUTPUT DEVICES), (*INPUT/OUTPUT
DEVICES, ELECTRICAL NETWORKS), DATA PROCESSING
SYSTEMS, DATA TRANSMISSION SYSTEMS, COMPUTER LOGIC,
CIRCUITS, SWITCHING CIRCUITS, GATES (CIRCUITS),
RELAXATION OSCILLATORS, TRIGGER CIRCUITS, PROGRAMMING
(COMPUTERS) (U)

IDENTIFIERS: 1963, G-20 COMPUTER (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-421 559

DAVID TAYLOR MODEL BASIN WASHINGTON D C
A TRANSISTORIZED EXPANDED TRANSLATOR FOR THE UNIVAC
MOD 407 CARD-TO-TAPE CONVERTER, (U)

DEC 63 32P HANCOCK, H. LEE, JR. I
MONITOR: DTMB 1760

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INPUT-OUTPUT DEVICES, CIRCUITS),
COMPUTER LOGIC, NETWORKS, DESIGN, PROGRAMMING
(COMPUTERS), DATA PROCESSING SYSTEMS, PUNCHED CARDS,
MAGNETIC TAPE (U)

IDENTIFIERS: 1962, CARD-TO-TAPE CONVERTERS, UNIVAC
MOD 407 TRANSLATOR (U)

THIS REPORT SUMMARIZES THE DESIGN, DEVELOPMENT, AND
CONSTRUCTION OF A TRANSISTORIZED TRANSLATOR TO
EXPAND THE MOD 407 REMINGTON-RAND CARD-TO-
TAPE CONVERTER (48-CHARACTER FORMAT) TO A
FULL 63-CHARACTER FORMAT CONVERTER. THE LOGICAL
DESIGN, CIRCUIT DESIGN, AND CONSTRUCTION AS WELL AS
THE ADDITIONAL CIRCUITRY REQUIRED FOR THE COMPARISON
MODULE ARE DESCRIBED AND DISCUSSED. NOW IN FULL
OPERATION, THIS EXPANDED TRANSLATOR IS GIVING
RELIABLE, MAINTENANCE-FREE SERVICE IN THE APPLIED
MATHEMATICS LABORATORY OF THE DAVID TAYLOR
MODEL BASIN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000396

AD-435 108

MITRE CORP BEDFORD MASS

AN INPUT/OUTPUT TYPEWRITER FOR COMMUNICATING WITH A
DIGITAL COMPUTER,

MAR 64 44P

MITCHELL, J. I

(U)

REPT. NO. TM2828

CONTRACT: AF19 628 2390

PROJ: 508

MONITOR: ESD TDR64 81

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, TYPEWRITERS),
(+TYPEWRITERS, DIGITAL COMPUTERS), INPUT-OUTPUT
DEVICES, DESIGN, DATA STORAGE SYSTEMS, INSTRUCTION
MANUEL, CIRCUITS

(U)

IDENTIFIERS: 1964, CODES, SYMBOLS

(U)

AN INPUT/OUTPUT TYPEWRITER PROVIDES THE TYPIST WITH
MEANS OF ENTERING DATA INTO A COMPUTER PROGRAM
THROUGH THE KEYBOARD AND A MEANS OF OBTAINING DATA
FROM THE COMPUTER THROUGH THE PRINTER. AN INPUT/
OUTPUT TYPEWRITER, WHICH IS A MODIFICATION OF A
STANDARD SELECTRIC TYPEWRITER, HAS BEEN DESIGNED
FOR USE WITH THE PHOENIX COMPUTER THROUGH THE LOW-
SPEED BUFFER OR WITH THE MITRE 7020 COMPUTER
THROUGH THE SYSTEM DESIGN LABORATORY (SDL)
DISPLAY CONSOLES. THE OPERATION OF THIS TYPEWRITER
IS DESCRIBED, AND THE FUNCTIONS OF THE MAJOR
COMPONENTS EXPLAINED. THE APPENDICES GIVE DETAILS
OF THE CODING AND OF THE SYSTEM DESIGN. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-425 465

HOUSTON FEARLESS CORP LOS ANGELES CALIF
AUTOMATIC UNIT-RECORD STORAGE AND RETRIEVAL DEVICE
BS-6A.

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. (U)

APR 64 459

SPENGLER, S. IMAISNER, L. I

REPT. NO. R112 64

CONTRACT: AF30 602 2952

PROJ: 4594

TASK: 459402

MONITOR: RADG

TOR62 502

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•INFORMATION RETRIEVAL, COMPUTERS),
DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS,
COMPUTER LOGIC, DESIGN, TEST SETS

IDENTIFIERS: 1964, SCRM PROJECT, BS-6A (U)
(U)

PROJECT SCRAM'S PRIME PROGRAM OBJECTIVE IS TO
ESTABLISH ECONOMICAL METHODS OF STORING 10,000 UNIT
RECORDS AND RETRIEVING THEM AT A MINIMUM RATE OF 190
PER SECOND PER MODULE. HYDRAULIC AND PNEUMATIC
METHODS OF UNIT-RECORD TRANSPORT PROVED OPERATIONALLY
UNRELIABLE AND DIFFICULT TO IMPLEMENT DURING
SUBSEQUENT BREADBOARDING, SO THEY WERE ABANDONED.
MORE RELIABLE AND ECONOMICAL ELECTROMECHANICAL
HARDWARE WAS DEVELOPED. LOGIC SUBSYSTEM DESIGN,
SPECIAL MEMORY-CONTROL CIRCUIT DESIGN, DESIGN OF
COMMERCIAL LOGIC CARDS, AND THE DRUM MEMORY DESIGN
ARE DISCUSSED IN THIS REPORT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-464 766

ROYAL AIRCRAFT ESTABLISHMENT FARNBOROUGH (ENGLAND)
DIGITAL MAGNETIC TAPE UNITS FOR THE MERCURY AND DEUCE
COMPUTERS. PART 2. CONTROL CIRCUITS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

NOV 64 IV SANDERSON, K. ITHANE, P. D. H.

REPT. NO. TR-64084

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+MAGNETIC TAPE, DIGITAL
COMPUTERS), (+DIGITAL COMPUTERS, MAGNETIC
TAPE), INPUT-OUTPUT DEVICES, GREAT BRITAIN,
POWER SUPPLIES, COMPUTER LOGIC, CIRCUITS (U)

THIS REPORT DESCRIBES THE FUNCTION AND FORMAT
SELECTION CIRCUITS, THE CIRCUITS CONTROLLING TAPE
DRIVE AND TAPE SPOOLING, AND THE POWER SUPPLIES FOR
THE MERCURY AND DEUCE COMPUTERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-600 271

TEXAS INSTRUMENTS INC DALLAS

DEVELOPMENT OF AN INTERMEDIATE CAPACITY, HIGH SPEED

MAGNETIC FILM MEMORY SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT., 18 JULY
62-15 MAY 62,

AUG 62

56P

TOOMBS, H. D. IDELHOM, L. A. I

CONTRACT: AF33 657 9228

PROJ: 4335

TASK: 433517

MONITOR: RTD

TOR62 4216

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA STORAGE SYSTEMS, MAGNETIC
RECORDING SYSTEMS), (+MAGNETIC RECORDING SYSTEMS, DATA
STORAGE SYSTEMS), (+DATA STORAGE SYSTEMS, CIRCUITS),
MAGNETIC FILMS, COMPUTERS, ALUMINUM, TRANSFORMERS,
TRANSISTORS (U)

IDENTIFIERS: MAGNETIC FILMS (U)

THE REPORT DESCRIBES THE DESIGN AND DEVELOPMENT OF
A MAGNETIC FILM MEMORY SYSTEM WITH A STORAGE CAPACITY
OF 4096 BITS ARRANGED AS 512 WORDS OF 8 BITS EACH.
THE WORD-ORGANIZED SYSTEM HAS A READ-WRITE CYCLE
TIME OF 142 NANOSECONDS. THE STORAGE MEDIUM
CONSISTS OF CONTINUOUS SHEETS OF MAGNETIC FILM
DEPOSITED ON POLISHED ALUMINUM SUBSTRATES. THE
LOCATION AND SIZE OF THE STORAGE BITS ARE DEFINED BY
THE INTERSECTION OF THE WORD AND DIGIT-SENSE
CONDUCTORS. A TRANSISTOR-CURRENT TRANSFORMER
MATRIX IS USED TO PERFORM WORD SELECTION AND TO
PROVIDE AN 800-MILLIAMPERE, 85-NANOSECOND BASE WIDTH
WORD DRIVE PULSE. A BIPOLAR DIGIT PULSE OF 200-
MILLIAMPERE, 40-NANOSECOND BASE WIDTH IS USED.
CURRENT SWITCHING IS USED IN THE LOW-LEVEL LOGIC
CIRCUITS. PERTINENT MEMORY WAVEFORMS ALONG WITH
OPERATING RESULTS ARE GIVEN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-600 928

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
DATA SYSTEMS.

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT., DIVISION 2. (U)

1 FEB70 APR 64.

MAY 64 21P FRICK, F. C. IDOOD, S. H. I

CONTRACT: AF19 620 300

MONITOR: ESD TOR64 97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, DIGITAL
COMPUTERS), (+DIGITAL COMPUTERS, DESIGN), (+SYSTEMS
ENGINEERING, DATA PROCESSING SYSTEMS), COMPUTER LOGIC,
COMPUTER STORAGE DEVICES, ELECTRONIC EQUIPMENT,
COMPILERS, PROGRAMMING (COMPUTERS), BIONICS,
INFORMATION RETRIEVAL, BALLISTICS (U)

CONTENTS: DIGITAL COMPUTERS--COMPUTER
SYSTEMS; CIRCUIT DEVELOPMENT; MAGNETIC
FILM ENGINEERING; ELECTRON TRANSPORT;
MAGNETIC FILMS; ADVANCED CIRCUITS;
AUTOMATIC PROCEDURE EXECUTOR; CONTROL
RESEARCH--DATA FILE, STORAGE, RETRIEVAL AND
EDITING. (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-601 458

NATIONAL SCIENTIFIC LABS INC MCLEAN VA

ALL-ELECTRONIC DATA INPUT-OUTPUT STUDY, (U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT., NO. 2, 1

JAN-31 MAR 64,

MAR 64 45P

LEPPER, WENDELL E. 1

CONTRACT: DA36 039AMC03246E

PROJ: 2828 04 001

TASK: 1G6 406030494 03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, INPUT-OUTPUT
DEVICES), (+INPUT-OUTPUT DEVICES, DATA PROCESSING
SYSTEMS), (+PRINTING, REVIEWS), PIEZOELECTRIC
TRANSDUCERS, PUNCHED CARDS, MAGNETOSTRICTIVE ELEMENTS,
PHOTOGRAPHIC PRINTERS, LASERS, FEASIBILITY

STUDIES

(U)

IDENTIFIERS: JET PRINTING, CARD READER

(U)

JET PRINTING STUDIES DURING THIS QUARTER INDICATED
THAT, ALTHOUGH THE TRANSDUCERS STUDIED MAY NOT BE
FEASIBLE FOR PIERCING MULTIPLE SHEETS OF PAPER, THEY
MAY BE USEFUL FOR PRINTING ONE OR MORE COPIES BY
IMPACT OF THE JET ON CARBON PAPER. THE SPARK
DISCHARGE METHOD OF JET ENERGIZING IS CONSIDERED
IMPRACTICAL BECAUSE OF THE HIGH VOLTAGE LEVELS
REQUIRED AND BECAUSE OF PROBLEMS ARISING FROM HIGH
OPERATING TEMPERATURES. BARIUM TITANATE WAS
ADJUDGED THE BEST PRACTICAL PIEZOELECTRIC MATERIAL.
SIMILARLY, PURE NICKEL IS THE BEST READILY AVAILABLE
MAGNETOSTRICTIVE MATERIAL. POSSIBLE JET PRODUCTION
VIA A PRESSURIZED VESSEL WITH ELECTROMECHANICAL
VALVES WAS CONSIDERED IMPRACTICAL AND WAS NOT
PURSUED. GAS TUBES AND NEON LAMPS ARE POTENTIALLY
USEFUL AS ELECTRONIC DISPLAY SOURCES FOR PHOTOGRAPHIC
OR ELECTROSTATIC PRINTING. THEY CAN OPERATE AT
HIGH SPEEDS AND THEY ARE RELATIVELY INEXPENSIVE.
USE WITH FIBER OPTICS WOULD OFFER FLEXIBILITY OF
CONSTRUCTION METHODS. OTHER LIGHT SOURCES, E.G.,
LASERS, ELECTROLUMINESCENCE, AND CATHODE-RAY TUBES,
MAY BE USED IN ELECTROSTATIC PRINTING. METHODS OF
MODULATING THE DIRECTION OF A LASER BEAM ELECTRICALLY
MAY BE USEFUL FOR FUTURE PRINTING DEVICES, IF COST
BECOMES REASONABLE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-601 618

NAVAL OPDNANCE LAB WHITE OAK MD

DELAY LINE TIME COMPRESSOR WOX-2A.

APR 64 53P MUNSON, JOHN C. 1

HARTON, LESTER E. 1

TASK: RUDC38000 902

MONITOR: NOL TR61 47

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DELAY LINES, DATA PROCESSING SYSTEMS),
(+DATA PROCESSING SYSTEMS, DIGITAL SYSTEMS), HIGH
FREQUENCY, DATA STORAGE SYSTEMS, TRANSISTORS, SONAR
EQUIPMENT, ACOUSTICS, CIRCUITS, DESIGN, GRAPHICS,
SIGNALS, PROCESSING, OPERATION, CORRELATORS, CLIPPER
CIRCUITS, ELECTRONICS

(U)

IDENTIFIERS: DELTIC WOX-2A, WOX-2A COMPRESSOR

(U)

THIS REPORT DESCRIBES IN SOME DETAIL THE FULLY
TRANSISTORIZED WOX-2A DELAY LINE TIME
COMPRESSOR (DELTIC). THE BIT RATE IS 10
MEGACYCLES. THIS EQUIPMENT HAS PROVEN TO BE VERY
RELIABLE IN DAILY OPERATION. THE TRANSISTORIZATION
HAS GREATLY REDUCED THE POWER REQUIRED RELATIVE TO
COMPARABLE VACUUM TUBE MODEL. SINCE THE PRINCIPLES
OF DELTIC OPERATION HAVE BEEN PRESENTED FULLY IN
EARLIER REPORTS (PB-165 024) ONLY A SHORT
DESCRIPTION OF BASIC PRINCIPLES IS GIVEN. INSTEAD,
THE DETAILS OF CIRCUIT OPERATION ARE BRIEFLY TREATED.
BLOCK DIAGRAMS, SCHEMATICS, AND PHOTOGRAPHS SHOWING
COMPONENT LAYOUTS ARE INCLUDED. PHOTOGRAPHS ARE
SHOWN OF TYPICAL WAVEFORMS AT VARIOUS POINTS WITHIN
THE SYSTEM, AND THESE ARE KEYED TO THE BLOCK DIAGRAMS
AND SCHEMATICS. ALL DIAGRAMS ARE GROUPED AT THE
END OF THE REPORT TO FACILITATE USE IN
TROUBLESHOOTING. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-602 067

IBM DATA SYSTEMS DIV KINGSTON N Y

CRYOGENIC ASSOCIATIVE PROCESSOR PLANE TEST AND
EVALUATION.

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR 15 AUG-19 (U)

DEC 62.

JUN 64

30P

ROSENBERGER, G. B. ;

CONTRACT: AF30 602 3175

PROJ: 5581

TASK: 558108

MONITOR: RADC

TD 64 26

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CRYOGENIC STORAGE DEVICES, RESEARCH
PROGRAM ADMINISTRATION), MANUFACTURING METHODS,
PERFORMANCE (ENGINEERING), DATA PROCESSING SYSTEMS,
SUPERCONDUCTIVITY, CIRCUITS, FILMS, POLYMERS, VAPOR
PLATING, VACUUM APPARATUS, CAPACITORS, LEAD, TIN,
METAL FILMS, SILICON COMPOUNDS, MONOXIDES, ELECTRIC
INSULATION, ELECTRON BOMBARDMENT (U)
IDENTIFIERS: CRYOTRONS (U)

THE FABRICATION AND TESTING OF A CRYOGENIC
ASSOCIATIVE PROCESSOR ARE DESCRIBED IN THIS
REPORT. THE PROCESSOR CONSISTED OF 2350 CRYOTRONS
INTERCONNECTED TO FORM TEN 12-BIT WORDS OF
ASSOCIATED STORAGE. THE CRYOTRONS AND THE
NECESSARY CONTROL CIRCUITRY WERE VACUUM-DEPOSITED ON
A FOUR AND A HALF BY FOUR AND A HALF INCH SUBSTRATE.
POLYMER TYPE INSULATION WAS USED. THE
FABRICATION PROCESS AND THE REASONS FOR LIMITED
SUCCESS OF THE PROGRAM ARE DISCUSSED IN DETAIL.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-605 263

BAY STATE ELECTRONICS CORP WALTHAM MASS

BS-501 HIGH-SPEED CORRELATOR.

(U)

DESCRIPTIVE NOTE: FINAL REPT.

AUG 64 86P

CONTRACT: TO 602 2915

PROJ: 552

TASK: 552401

MONITOR: RADCL, TDR64 198

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CORRELATORS, DESIGN), (*SPECIAL PURPOSE COMPUTERS, CORRELATORS), OPERATION, REAL TIME, CORRELATION TECHNIQUES, CIRCUITS, DIGITAL COMPUTERS, ACOUSTICS

(U)

IDENTIFIERS: BS-501 CORRELATOR

(U)

THIS REPORT DESCRIBES THE DESIGN AND DEVELOPMENT OF AN EXPERIMENTAL REAL TIME AUDIO BANDWIDTH (90 TO 5000 CPS) CORRELATOR THAT WILL DISPLAY A CORRELOGRAM WHILE OPERATING 'ON LINE.' THE CORRELATION INDEX IS DISPLAYED AS A FUNCTION OF RELATIVE DELAY AND TIME FOR EITHER AUTO OR CROSS CORRELATION. THE CORRELOGRAM IS PRESENTED AS A THREE-DIMENSIONAL DISPLAY ON THE CRT OF A SELF-CONTAINED OSCILLOSCOPE WITH THE X AXIS PRESENTING TIME, Y AXIS RELATIVE DELAY AND Z (INTENSITY) REPRESENTING THE CORRELATION INDEX. SIGNAL INPUT CIRCUITRY INCLUDES A NORMALIZED (AGC) FUNCTION WITH 40 DB DYNAMIC RANGE ALONG THE NECESSARY GROSS INPUT LEVEL CONTROLS AND METERING. A FIVE-BIT A TO D CONVERTER DRIVES A RECIRCULATING MEMORY SPEED UP SYSTEM. APPROPRIATE CLOCK, ACCUMULATOR, AND COMPUTE CIRCUITS ARE USED TO APPROXIMATE CORRELATION COEFFICIENT AT A REAL TIME RATE. THE OUTPUT D TO A CONVERTER DRIVES THE Z AXIS OF THE OSCILLOSCOPE TO INDICATE THE CORRELATION COEFFICIENT. THE OPERATING FEATURES OF THIS DEVICE ARE GIVEN.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-606 390

MASSACHUSETTS INST OF TECH CAMBRIDGE INSTRUMENTATION
LAB

TRANSISTORIZED SHIFT REGISTER.

(U)

DESCRIPTIVE NOTE: BACHELOR OF SCIENCE THESIS,

JUN 57 74P SCHOENDORF, WILLIAM H. ;

REPT. NO. T-126

CONTRACT: AFO4 645 9

PROJ: 52 126

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART
UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST
AVAILABLE COPY.

DESCRIPTORS: (+TRANSISTORS, MAGNETIC CORES),
(+MAGNETIC CORE STORAGE, TRANSISTORS), DELAY CIRCUITS,
DIODES, PENTODES, RADIOFREQUENCY PULSES, SWITCHING
CIRCUITS, VOLTAGE, ELECTRIC CURRENTS, WIRING DIAGRAMS,
EXPERIMENTAL DATA

(U)

IDENTIFIERS: SHIFT REGISTERS

(U)

THE OBJECTIVE WAS TO STUDY A TRANSISTORIZED
MAGNETIC CORE SHIFT REGISTER AND TO EVALUATE A
SUITABLE POWER TRANSISTOR AS A POSSIBLE DRIVING
SOURCE FOR THE REGISTER. INVESTIGATION OF THE
REGISTER WAS ORIGINALLY CARRIED OUT USING A PENTODE
DRIVER IN ORDER TO OFFER A MEANS FOR COMPARISON WITH
THE TRANSISTOR SHIFTING SOURCE. THE WESTERN
ELECTRIC GA-92630 PNP JUNCTION TRANSISTOR WAS
FOUND TO MEET THE REGISTER REQUIREMENTS QUITE
SATISFACTORILY. OPERATING REGIONS OF THE SHIFT
REGISTER WERE OBTAINED USING THIS TRANSISTOR IN THE
GROUNDED EMITTER AND GROUNDED BASE CONFIGURATIONS,
AND THE LATTER WAS FOUND TO BE MORE SUCCESSFUL. IT
WAS POSSIBLE TO DRIVE THIRTY CORES QUITE RELIABLY
USING THE GROUNDED BASE CONFIGURATION, AND THE
OPERATING REGIONS OBTAINED COMPARED FAVORABLY WITH
THOSE OF THE VACUUM TUBE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-606 604

RAND CORP SANTA MONICA CALIF
CONTRASTS IN LARGE FILE MEMORIES FOR LARGE SCALE
COMPUTERS,

MAR 58 BP POSTLEY, JOHN A. I
REPT. NO. P-1230

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART
UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST
AVAILABLE COPY.

DESCRIPTORS: (COMPUTER STORAGE DEVICES, DIGITAL
COMPUTERS), PERFORMANCE (ENGINEERING), CONTROL
SYSTEMS, ANALYSIS, MAGNETIC TAPES

(U)

THE INCREASING REQUIREMENT FOR VERY LARGE FILES IN
DIGITAL COMPUTER SYSTEMS HAS LEAD TO THE
IDENTIFICATION OF SEVERAL IMPORTANT CHARACTERISTICS
OF THESE FILES, AND TO THE DEVELOPMENT OF FILES WHICH
EXHIBIT THESE CHARACTERISTICS IN VARYING DEGREES.
AS A RESULT, A NEW SITUATION HAS BEEN CREATED
WHEREIN A DETAILED STUDY OF THESE CHARACTERISTICS
WILL NOW BE NECESSARY IN SOME APPLICATIONS TO
DETERMINE THE PARTICULAR FILE MOST SUITABLE FOR THE
PROBLEM OR PROBLEMS TO BE DEALT WITH.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-607 220

MIDWEST RESEARCH INST KANSAS CITY MO

INVESTIGATION OF ELECTRO- AND MAGNETOOPTIC TECHNIQUES
FOR INFORMATION STORAGE AND RETRIEVAL. (U)

DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT. FOR 1 MAY
64-71 JUL 64.

SEP 64 72P CONNELL, R. A. I

CONTRACT: AF33 657 11560

PROJ: 7062 ,2699P

TASK: 706201

MONITOR: AL , TDR64 228

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, MATERIALS),
(+THIN FILMS (STORAGE DEVICES), PRODUCTION),
(+MANGANESE COMPOUNDS, BISMUTH COMPOUNDS), DATA
STORAGE SYSTEMS, INFORMATION RETRIEVAL, INTERMETALLIC
COMPOUNDS, FERROMAGNETIC MATERIALS, MAGNETO-OPTIC
EFFECT, OPTICAL PROPERTIES, CRYSTALS, EVAPORATION,
POWDERS, CRYSTAL STRUCTURE (U)

A PROGRAM OF RESEARCH ON MATERIALS FOR HIGH DENSITY
INFORMATION STORAGE AND RETRIEVAL WAS CONDUCTED, WITH
EMPHASIS ON THE FABRICATION OF THIN FILMS OF
MNB1. THIS INTERMETALLIC COMPOUND IS
FERROMAGNETIC, WITH ITS AXIS OF EASY MAGNETIZATION
ALONG ITS HEXAGONAL C-AXIS. POLYCRYSTALLINE FILMS
OF THIS MATERIAL GENERALLY SHOW A STRONGLY PREFERRED
ORIENTATION, WITH THE C-AXIS NORMAL TO THE PLANE OF
THE FILM. SUCH A CONFIGURATION IS IDEAL FOR THE
EMPLOYMENT OF MAGNETO-OPTICAL READ-OUT SYSTEMS.
MAJOR PROBLEMS EXIST IN THE CONTROL OF NUCLEATION
AND GROWTH OF SUITABLY ORIENTED MNB1, AND IT WAS
HERE THAT MAXIMUM EFFORT WAS MADE. SEVERAL
FABRICATION TECHNIQUES WERE TRIED, INCLUDING PHYSICAL
SPUTTERING, GRAIN-BY-GRAIN FLASH EVAPORATION OF BOTH
MIXED POWDERS AND PREFORMED ALLOY POWDER, AND
SEQUENTIAL EVAPORATION SCHEMES. THE LATTER METHOD
GAVE THE BEST RESULTS IN SPITE OF PROBLEMS IN
INTERLAYER DIFFUSION AND COMPOUND FORMATION.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000396

AD-607 906

THOMPSON RAMO WOOLDRIDGE INC LOS ANGELES CALIF
THE RAMO-WOOLDRIDGE CORPORATION GENERAL RESEARCH
PROGRAM, 1957. SECTION E. MAGNETIC DIGITAL
TECHNIQUES.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT.,

JAN 58 7P SCARBROUGH, A. D. INYBERG, J. J. I

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*MAGNETIC CORES, DIGITAL SYSTEMS),
(*THIN FILMS (STORAGE DEVICES), MAGNETIC CORE
STORAGE), CIRCUITS, ELECTROMAGNETIC PROPERTIES,
PLATING, DIGITAL COMPUTERS
IDENTIFIERS: THIN FILMS, THIN FILMS
ELECTRONICS

(U)

(M)

A. PROGRESS REPORT IS PRESENTED ON THE
INVESTIGATIONS OF DIGITAL CIRCUITS USING FERRITE
MEMORY CORES AND THIN FILMS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-608 077

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
TAPE-DRIVE ASSEMBLY FOR MAGNETIC TAPES IN THE M-2
COMPUTER, (U)

OCT 64 20P KNYAZEV, V. D. ISAKHAROV, V. N. 1
MONITOR: FTD :TT MT64 2311 64 71686

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF TSIFROVAYA
TEKHNIKA I VYCHISLITEL'NYE USTROISTVA (USSR) 1962,
NO. 2, P.88-97.

DESCRIPTORS: (*MAGNETIC TAPE, ELECTROMAGNETIC
DRIVES), (*DRIVES, MAGNETIC TAPE), COMPUTERS, COMPUTER
STORAGE DEVICES, MAGNETIC RECORDING SYSTEMS, CONTROL
SYSTEMS, COMPUTER LOGIC, WIRING DIAGRAMS, MECHANICAL
DRAWINGS, USSR (U)

THE TAPE-DRIVE ASSEMBLY IS DESIGNED FOR SLIDING THE
MAGNETIC TAPE UNDER READ-RECORD HEADS IN ACCORDANCE
WITH INSTRUCTIONS, ARRIVING FROM CONTROL BLOCK OF
MEMORY UNIT. IN THE TAPE-DRIVE ASSEMBLY THERE IS
REALIZED ALSO DIRECT RECORDING OF INFORMATION ON TAPE
AND READING OF INFORMATION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-609 005

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

DIVISION 2. DATA SYSTEMS.

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. FOR 1 AUG-21
OCT 64. (U)

NOV 64 25P

CONTRACT: AF19 628 500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DATA PROCESSING SYSTEMS, COMPUTERS),
(*COMPUTERS, DATA PROCESSING SYSTEMS), CIRCUITS,
SWITCHING CIRCUITS, TRANSISTORS, COMPUTER STORAGE
DEVICES, ELECTRONICS, ANALOG-DIGITAL COMPUTERS,
DESIGN, CONTROL, INFORMATION RETRIEVAL, MAGNETIC TAPE,
ALUMINUM, OXIDES, DIODES, TRIODES (U)

IDENTIFIERS: APOLLO, PRESS PROJECT, *CLEAN
ROOMS (U)

CONTENTS: DIGITAL COMPUTERS; COMPUTER
SYSTEMS-CURVE-DRAWING SCOPE, OPTICAL INPUT,
MULTIUSER CONSOLES, SYMBOLIC PAGE-ADDRESS
TRANSFORMATION; CIRCUIT DEVELOPMENT--INTEGRATED
CIRCUITS, LSI SWITCHING TRANSISTORS, TRANSISTOR
FLIP-FLOP MEMORY; MAGNETIC FILM ENGINEERING-
CLEAN ROOM, PATTERN SCRIBING, MAGNETIC FILM
CHARACTERISTICS, CONTENT--ADDRESSED MEMORY, LARGE-
CAPACITY MEMORY TESTER, CIRCUIT DESIGN, PAGE-ADDRESS
MEMORY; SYSTEM PROGRAMMING APPLICATIONS--CLASS-
ORIENTED RING ASSOCIATIVE LANGUAGE, VARIABLY
INITIALIZED TRANSLATOR FOR ALGORITHMIC LANGUAGES;
COMPUTER COMPONENTS: MAGNETIC FILMS--
ANISOTROPY, MAGNETO-OPTICS, TERNARY ALLOYS;
ELECTRON TRANSPORT-AL-AL2O3 DIODES AND
TRIODES, CONTACT POTENTIAL DURING AL2O3 GROWTH,
FILM-MEMORY SENSE AMPLIFIERS; PSYCHOLOGY:
AUTOMATIC PROCEDURE EXECUTOR; HUMAN
INFORMATION PROCESSES--RECOGNITIVE BEHAVIOR,
UNIDIMENSIONAL SIMILARITY, SIGNAL DETECTION,
PERCEPTIBILITY AND MEMORABILITY; AND CONTROL
RESEARCH: ON-LINE DATA STORAGE,
RETRIEVAL, AND EDITING; HYBRID COMPUTER
DEVELOPMENT; ESTIMATION AND CONTROL THEORY.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-609 469

RCA LABS PRINCETON N J

CRYOELECTRIC RANDOM ACCESS MEMORY, PHASE II 10(9) BIT
MEMORY. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 1 MAR 62-1 MAR 64.

NOV 64 262P

BURNS, L. L. BOSWICK, D. I

CHRISTIANSEN, D. A. COSENTINO, J. S. FEJER, J. I

CONTRACT: AF30 602 2090

PROJ: 5581

TASK: 558108

MONITOR: RADC .

TDR64 27a

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-422 990.

DESCRIPTORS: (*CRYOGENIC STORAGE DEVICES,
MANUFACTURING METHODS), (*COMPUTER STORAGE DEVICES,
DIGITAL COMPUTERS), CRYOGENICS, ELECTRICAL NETWORKS,
THERMODYNAMICS, THEORY, COMPUTER LOGIC, THIN FILMS
(STORAGE DEVICES), SUPERCONDUCTORS. (U)

IDENTIFIERS: RANDOM ACCESS MEMORY, CRYOTRONS,
RYOTRONS (U)

THIS REPORT COVERS THE WORK PERFORMED UNDER PHASE
II OF A CONTEMPLATED THREE-PHASE PROGRAM TO DEVELOP
THE THEORY AND TECHNOLOGY NECESSARY FOR THE
MANUFACTURE OF BILLION-BIT CRYOELECTRIC MEMORIES.
FURTHER ADVANCES IN THE THEORETICAL UNDERSTANDING
OF MEMORY OPERATION HAVE CLEARLY DELINEATED THE
REQUIREMENTS OF THE FABRICATION EFFORT. TESTS OF
THE MANY SAMPLES MADE DURING THE YEAR HAVE
ESTABLISHED THAT THE MATCHING OF MEMORY PLANES WITH
THE NECESSARY CRYOTRON TREES IS PRACTICAL. PHASE
II CLOSED WITH THE SUCCESSFUL TESTING OF A 128 BY
128 MEMORY PLANE CONTAINING 16,384 CELLS AND 908
CRYOTRONS IN THE TREES. ONLY A PROBLEM WITH
UNEXPECTEDLY LOW SENSE SIGNALS FROM THE CENTER
PORTION OF THE PLANE PREVENTED THE STACKING OF A
GROUP OF THESE PLANES. IMPROVED HIGH-SPEED
EVAPORATION PLANTS HAVE GREATLY INCREASED THE YIELD
OF EXPERIMENTAL SAMPLES AND IMPROVED THEIR QUALITY.
CONTINUED ADVANCES IN MASK FABRICATION TECHNIQUES
HAVE PROVIDED METHODS THAT ARE SUITABLE FOR THE FINER
PATTERNS REQUIRED FOR 512 BY 512 AND 1024 BY 1024
PLANES. RELATED WORK ON HIGH-SPEED SELECTION TREES
EMPLOYING CRYOTRONS IS REPORTED. IT IS SHOWN THAT
CRYOTRONS ARE SUITABLE FOR THIS APPLICATION BUT
FURTHER WORK IS NECESSARY TO REDUCE THE HEAT
DISSIPATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-610 211

DAVID TAYLOR MODEL BASIN WASHINGTON D C
A TECHNIQUE FOR UTILIZING THE IBM OR THE RCA RANDOM-
ACCESS MASS-MEMORY DEVICES TO STORE THE DATA BASE OF
A COMMAND AND CONTROL INFORMATION PROCESSING
SYSTEM.

(U)

NOV 64 12P

FRIEDENBERG, PAUL E. I

WALTON, THOMAS S. I

REPT. NO. DTMB-1917

PROJ: SS192 001

TASK: 7160

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, COMPUTER
STORAGE DEVICES), (+DATA PROCESSING SYSTEMS, COMPUTER
STORAGE DEVICES), DIGITAL COMPUTERS, MAGNETIC CORE
STORAGE, DATA STORAGE SYSTEMS

(U)

IDENTIFIERS: RANDOM-ACCESS MEMORY, UNIVAC CP-667

(U)

TWO DIFFERENT MASS MEMORIES ARE STUDIED FOR THEIR
SUITABILITY TO STORE THE DATA BASE IN A COMMAND AND
CONTROL INFORMATION-PROCESSING SYSTEM. THE IBM
UNIT EMPLOYS METAL DISK PACKS WHEREAS THE RCA UNIT
USES MAGAZINES OF PLASTIC CARDS FOR THE RECORDING
MEDIUM. HOWEVER, ANALOGIES IN THEIR LOGICAL
CAPABILITIES MAKE IT POSSIBLE TO USE IDENTICAL
METHODS OF FILE ORGANIZATION. IT IS SHOWN THAT THE
EQUIPMENT CAN BE EFFECTIVELY UTILIZED TO PROCESS
FORMATED FILES ON A RANDOM-ACCESS BASIS. COMPACT
INDEXES ARE GENERATED SO THAT ITEMS CAN BE QUICKLY
LOCATED EITHER BY NAME OR BY CODE. THE TIMES
REQUIRED FOR UPDATING AND SEARCHING SUCH FILES ARE
ANALYZED, AND THE ADVANTAGES TO BE GAINED OVER
CONVENTIONAL TECHNIQUES ARE INDICATED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-611 142

GENERAL ELECTRIC CO BRIDGEPORT CONN
REINFORCED PLASTIC MAGNETIC TAPE.

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 4, 1 DEC 62-31 (U)

MAR 63,

MAR 63 29P KIRK, N. IMBOURNIE, D. I

LASSILA, A. I

CONTRACT: DA26 029SCB8951

PROJ: 3A99 15 003

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-287 219.

DESCRIPTORS: (MAGNETIC TAPE, DATA STORAGE SYSTEMS),
(MAGNETIC RECORDING SYSTEMS, MAGNETIC TAPE),
(REINFORCING MATERIALS, MAGNETIC TAPE), ELASTOMERS,
PLASTICS, SILICONE PLASTICS, GLASS, GLASS TEXTILES,
CARBONATES, BINDERS, DATA PROCESSING SYSTEMS, TENSILE
PROPERTIES, COATINGS, NITRILES, OXIDES, ANALYSIS,
MANUFACTURING METHODS, RELIABILITY (ELECTRONICS),
TESTS (U)

MAGNETIC TAPE BASE MATERIALS POSSESS INADEQUACIES
IN CERTAIN CRITICAL DATA STORAGE APPLICATIONS. THE
OBJECTIVE OF THE PROJECT IS TO DEVELOP BACKING
MATERIALS WHICH WILL IMPROVE THE EFFICIENCY AND
RELIABILITY OF AUTOMATIC DATA PROCESSING EQUIPMENT
AND ASTROELECTRONIC RECORDING DEVICES. EVALUATIONS
OF WEAVE CONSTRUCTION AND CONTINUOUS PRODUCTION
PROCESSES FOR A PROMISING NEW FABRIC WERE INITIATED.
INVESTIGATION OF A NEW POLYCARBONATE ELASTOMER AS A
RESIN BINDER COMMENCED. PHYSICAL TESTING
EMPHASIZED WET STRENGTH RETENTION AND TEAR STRENGTH
MEASUREMENTS. A NITRILE SILICONE FLUID AS PRIMER
EXHIBITED EXCEPTIONAL WET STRENGTH RETENTION.
PRECISION SLITTING EXPERIENCE WAS GAINED. FINAL
TAPE SAMPLES, THE FIRST REQUIRING SEMICONTINUOUS
PROCESSING EQUIPMENT, WERE SUPPLIED. A
GLASSREINFORCED MAGNETIC TAPE BASE WITH ADVANTAGES
WARRANTING CONTINUED DEVELOPMENT WAS ACHIEVED.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-612 941

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

DIVISION 2. DATA SYSTEMS.

(U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. FOR 1 NOV 64-

31 JAN 65.

FEB 65 25P

FRICK, F. C. I

CONTRACT: AF19 628 400

MONITOR: ESD,

TDR-65-47

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-609 005.

DESCRIPTORS: (*COMPUTERS, SCIENTIFIC RESEARCH),
(*MAGNETIC TAPE, SCIENTIFIC RESEARCH), (*PSYCHOLOGY,
SCIENTIFIC RESEARCH), (*DATA PROCESSING SYSTEMS,
COMPUTERS), DATA PROCESSING SYSTEMS, COMPUTER STORAGE
DEVICES, ANALOG-DIGITAL COMPUTERS, DIODES, ALUMINUM
COMPOUNDS, OXIDES, CONTROL, TRANSISTORS, RECALL,
PERCEPTION (PSYCHOLOGY), CONTROL SYSTEMS

(U)

IDENTIFIERS: TX COMPUTERS, APEX (AUTOMATIC PROCEDURE
EXECUTOR)

(U)

CONTENTS: DIGITAL COMPUTERS---GROUP 23
COMPUTER SYSTEMS CIRCUIT DEVELOPMENT
MAGNETIC FILM ENGINEERING SYSTEM PROGRAMMING
AND APPLICATIONS COMPUTER COMPONENTS---GROUP 24
MAGNETIC FILMS ELECTRON TRANSPORT PSYCHOLOGY-
--GROUP 25 AUTOMATIC PROCEDURE EXECUTOR
HUMAN INFORMATION PROCESSES CONTROL RESEARCH---
GROUP 26 HYBRID COMPUTER SYSTEMS ESTIMATION
AND CONTROL STUDIES.

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-417 769

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB
DESIGN ASPECTS OF MINIMAL-POWER DIGITAL
CIRCUITRY,

FEB 65 33P

SCHMIDT, W. G. (CHACE, D. E.) (U)

REPT. NO. GR-1965-6

CONTRACT: AF19 628 500

MONITOR: ESD ,

TDR-65-45

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIGITAL COMPUTERS,
CIRCUITS), (*CIRCUITS, DESIGN), (*MICROMINIATURIZATION
(ELECTRONICS), CIRCUITS), (*SPACECRAFT, DIGITAL
COMPUTERS), SEMICONDUCTOR DEVICES, RELIABILITY
(ELECTRONICS), TRANSISTORS, COMPUTER LOGIC, COMPUTER
STORAGE DEVICES, RELAXATION OSCILLATORS, GATES
(CIRCUITS), POWER

IDENTIFIERS: MINIMAL-POWER CIRCUITRY

(U)

(U)

MINIMAL-POWER DIGITAL CIRCUITRY, WHILE A NECESSITY
FOR SPACECRAFT OPERATION, HAS ADVANTAGES WHICH APPLY
TO BOTH SPACE-BORNE AND GROUND-BASED DIGITAL DATA
PROCESSING. SOME OF THE LOW-POWER DIGITAL CIRCUIT
DESIGN EFFORTS ARE PRESENTED IN WHICH LINCOLN
LABORATORY HAS BEEN ENGAGED FOR THE PAST FEW YEARS.
THESE TECHNIQUES HAVE BEEN EMPLOYED IN A NUMBER OF
SCIENTIFIC SATELLITES AND SPACE PROBES; SIMILAR
DESIGNS ARE TO BE USED IN THE LINCOLN
EXPERIMENTAL SATELLITE (LES). THE INFLUENCE OF
NEW SEMICONDUCTOR DEVICES UPON THE MINIMAL-POWER
CONCEPT IS DISCUSSED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-612 162

FRANKFORD ARSENAL PHILADELPHIA PA RESEARCH AND DEVELOPMENT
DIRECTORATE
DEVELOPMENT OF A PARALLEL OUTPUT PRINTER FOR THE
FADAC COMPUTER. (U)

DESCRIPTIVE NOTE: INTERIM REPT.,
DEC 64 47P MUNNICH, ROBERT F. ;
REPT. NO. M65-10-1
PROJ: 1W542709D36100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY
LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF
REQUESTED BY USERS OF DDC. COPY IS AVAILABLE FOR PUBLIC
SALE.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES; DESIGN),
(*TYPEWRITERS; COMPUTERS), COMPUTER LOGIC, CIRCUITS,
WIRING DIAGRAMS, PROGRAMMING (COMPUTERS), OPERATION (U)
IDENTIFIERS: FADAC COMPUTER (U)

THIS REPORT CONTAINS A DESCRIPTION OF THE FUNCTIONS
AND DESIGN DETAILS OF THE FADAC OUTPUT TYPEWRITER
(FADOT), WHICH WAS FABRICATED SPECIFICALLY FOR
LABORATORY USE WITH THE FADAC COMPUTER. THE
MACHINE CONSISTS OF A MODIFIED IBM SELECTRIC INPUT/
OUTPUT TYPEWRITER AND INTERFACE ELECTRONICS.
LOGIC, CIRCUITRY AND OPERATION DETAILS ARE
PROVIDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-614 010

CATHOLIC UNIV OF AMERICA WASHINGTON D C
RESEARCH ON THE APPLICATION OF FERRO-AND
FERRIELECTRIC PHENOMENA IN COMPUTER DEVICES. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR AUG 62-OCT 64

FEB 65 77P PULVARI, CHARLES F. I

CONTRACT: AF33 657 8871

PROJ: 4160

TASK: 416004

MONITOR: RADC , TP-64-529

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY
LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF
REQUESTED BY USERS OF DDC. COPY IS AVAILABLE FOR PUBLIC
SALE.

DESCRIPTORS: (*FERROELECTRIC CRYSTALS, COMPUTER
LOGIC), (*COMPUTER LOGIC, FERROELECTRIC CRYSTALS),
(*COMPUTER STORAGE DEVICES, FERROELECTRIC CRYSTALS),
(*BISMUTH COMPOUNDS, OXIDES), DIELECTRICS, SWITCHING
CIRCUITS, CAPACITORS, POLARIZATION, FERROELECTRIC
MATERIALS, COMPUTERS (U)
IDENTIFIERS: TRANSPOLARIZERS, BISMUTH OXIDES (U)

THE OBJECTIVE OF THIS RESEARCH WAS TO DEMONSTRATE
THAT CAPACITOR ELEMENTS COMPOSED OF FERRIELECTRICS OF
THE MBO TYPE EMPLOYED AS A DIELECTRIC REPRESENT AN
IMPORTANT IMPROVEMENT AS COMPARED TO ORDINARY
FERROELECTRIC CAPACITORS AND THAT THEY CAN BE
UTILIZED AS A LOGIC AND MEMORY DEVICE. FABRICATION
TECHNIQUES OF THESE FERRIELECTRIC DEVICES ARE
DISCUSSED WITH A SPECIAL EMPHASIS ON THE PREPARATION
OF UNIFORMITY WHEN LARGE QUANTITIES OF SUCH DEVICES
ARE FABRICATED. THE DEVELOPMENT OF FIELD
CONTROLLED POLARIZATION TRANSFER DEVICES
(TRANSPOLARIZERS) CONTINUED UTILIZING UNIFORM
QUALITY FERRIELECTRIC CRYSTALS AS A DIELECTRIC.
THE DEVELOPMENT OF VARIOUS LOGIC CIRCUITS IS
PRESENTED AND FOR THE FIRST TIME A HALF ADDER WAS
SUCCESSFULLY OPERATED UTILIZING CAPACITORS EXHIBITING
FERROELECTRIC PROPERTIES AS SWITCHING ELEMENTS. A
SMALL SECTION OF A RANDOM ACCESS MEMORY WAS
CONSTRUCTED AND INVESTIGATED UTILIZING FERRIELECTRIC
TRANSPOLARIZERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-613 215

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
ON THE SYNTHESIS OF CONTROL SYSTEMS FOR AN ELECTRONIC
DIGITAL COMPUTER, (U)

APR 65 25P BRUEVICH, N. G. I

REPT. NO. FTD-TT-64-785

MONITOR: TT, 65-62215

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
AKADEMIYA NAUK SSSR, IZVESTIYA, ENERGETIKA I
TRANSPORT N4 P93-106 1961.

DESCRIPTORS: (*DIGITAL COMPUTERS, PROGRAMMING
(COMPUTERS)), (*PROGRAMMING COMPUTERS, DIGITAL
COMPUTERS), (*CONTROL SYSTEMS, SYNTHESIS), COMPUTER
LOGIC, COMPUTER STORAGE DEVICES, SIGNALS, TRIGGER
CIRCUITS, SWITCHING CIRCUITS, USSR (U)

TRANSLATION OF RUSSIAN RESEARCH: SYNTHESIS OF
CONTROL SYSTEMS FOR AN ELECTRONIC DIGITAL COMPUTER.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-616 269

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
COMPUTER TECHNOLOGY, 1967, NO. 3 (SELECTED
ARTICLES).

MAY 68 50P ASCYAN, L. M. GEVORKYAN, M. G. (U)
REPT. NO. FTD-TT-65-108
MONITOR: TT, 42431

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
MOSKOVSKOE VYSSHEE TEKHNIЧЕСKOE UCHILISHCHE.
VYCHISLITEL'NAYA TEKHNIKA (USSR) NO. 274-90, 102-21
1962.

DESCRIPTORS: (+DIGITAL COMPUTERS, RESONATORS),
(+COMPUTER LOGIC, RESONATORS), CIRCUITS,
SWITCHING CIRCUITS, TRIGGERING CIRCUITS,
CAPACITORS, RESISTORS, OSCILLATORS, FERRITES,
MAGNETIC CORE STORAGE, TRANSFORMERS,
DIODES (SEMICONDUCTOR), MAGNETIC TAPE, USSR,
COMPUTERS

IDENTIFIERS: PARAMETRONS

(U)
(U)

CONTENTS: THE PARAMETRON: AN ELEMENT IN
DIGITAL COMPUTERS, BY L. M. ASOYAN; GENERAL
INFORMATION ON PARAMETRONS; FUNDAMENTAL PROPERTIES
OF PARAMETRIC OSCILLATIONS; OPERATING PRINCIPLE OF
THE PARAMETRON; VARIABLE-INDUCTANCE PARAMETRON;
MULTI-HOLE FERRITE PARAMETRONS; VARIABLE-CAPACITANCE
PARAMETRON; MAGNETIC-FILM PARAMETRON; THREE-CYCLE
AND TWO-CYCLE METHODS OF DRIVING PARAMETRONS;
CONSTRUCTION OF PARAMETRON LOGIC CIRCUITS; CERTAIN
PROBLEMS IN THE INVESTIGATION OF THE PARAMETRON, BY
L. M. ASOYAN AND M. G. GEVORKYAN; CALCULATIONS
OF PARAMETRON DRIVING CURRENT AND DETERMINATION OF
SPECIFICATIONS FOR CORE MATERIAL; DETERMINING OPTIMUM
OPERATING POINT; CERTAIN WAYS TO REDUCE THE POWER
DRAWN BY THE PARAMETRON; DETERMINING THE PARAMETERS
OF THE PARAMETRON RESONANCE NETWORK; CALCULATING
THE PARAMETERS OF THE COUPLING TRANSFORMER;
DETERMINATION OF THE LARGEST NUMBER OF PARAMETRONS
THAT CAN BE CONNECTED AT THE OUTPUT OF A CONTROL
PARAMETRON; DETERMINING RISE AND FALL TIMES OF THE
SUBHARMONIC OSCILLATIONS IN THE PARAMETRON;
DETERMINING THE LARGEST NUMBER OF INPUT SIGNALS
THAT CAN BE CONNECTED AT A PARAMETRON'S INPUT.

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800796

AD-618 491

TEXAS INSTRUMENTS INC DALLAS
FABRICATION AND TESTING OF CRYOGENIC ASSOCIATIVE
PROCESSOR PLANES.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR 3 MAY-12
DEC 64.

MAY 64 60P PRITCHARD, J. PAUL, JR.;
REPT. NO. 08-65-11
CONTRACT: AF30 602 2423
PROJ: 5561
TASK: 558109
MONITOR: RADG, TR-65-74

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMPUTER STORAGE DEVICES, THIN
FILMS: STORAGE DEVICES), (THIN FILMS: STORAGE
DEVICES), SUPERCONDUCTORS), CRYOGENICS, DATA
PROCESSING SYSTEMS, COMPUTER LOGIC, CIRCUITS
IDENTIFIERS: THIN FILMS, THIN FILMS
ELECTRONICS

(U)

(M)

FEASIBILITY IS ESTABLISHED OF A UNIQUE
PHOTOMASKPHOTORESIST PROCESS FOR FABRICATION OF A
120-BIT, 2550-CRYOTRON ASSOCIATIVE MEMORY PLANE. A
SET OF NINE PHOTOMASKS DEFINES THE FIVE
SUPERCONDUCTIVE AND FOUR INSULATING MATERIAL LAYERS
OF THE STRUCTURE. THE THIN FILM CIRCUITRY OCCUPIES
A 4 SQUARE INCH AREA OF A 2.4 INCH X 2.4 INCH GLASS
SUBSTRATE. TWO HUNDRED AND FIFTY SOLDER LANDS,
0.007 INCH X 0.100 INCH ON 0.014 INCH CENTERS, ARE
SUITABLY GROUPED AROUND THE SUBSTRATE PERIMETER FOR
PRESSURE CONTACT WITH THE DATA LINK. SEVEN SHORT-
FREE MEMORY PLANES WERE SUCCESSFULLY PRODUCED WITH
INTENDED SIGNAL PATH CONTINUITY, AS ESTABLISHED BY DC
TESTS AT 300K AND BELOW 2.5K. DIFFICULTIES IN
SIMULTANEOUSLY ACHIEVING SUPERCONDUCTIVE PRESSURE
CONTACT AT ALL SOLDER LANDS PRECLUDED MEMORY
OPERATION. HOWEVER, CURRENT LOOP SWITCHING AND
TRAPPING WERE DEMONSTRATED FOR ACCESSIBLE CRYOTRON
CIRCUIT SEGMENTS. SOLUTIONS TO THIS UNANTICIPATED
INTERCONNECTION PROBLEM WERE SUBSEQUENTLY CONCEIVED
AND DEMONSTRATED. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-619 961

INFORONICS INC HAYWARD MASS
TEXT REPORTING AND EDITING DEVICE: COMPARATIVE
OPERATIONAL PERFORMANCE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JUN 64-APR 65.

JUL 65 32P NUGENT, WILLIAM R. I

CONTRACT: AF30 602 3065

PROJ: 4394

MONITOR: RADC , TR-65-195

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PUNCHED TAPE, PROCESSING),
DOCUMENTATION, PREPARATION, COSTS, ABSTRACTING,
TIME STUDIES, COMPUTERS, TYPEWRITERS, READING,
PERFORMANCE(HUMAN), MACHINES
IDENTIFIERS: FLEXOWRITERS

(U)

(U)

THE TEXT REPORTING AND EDITING DEVICE
(TEXT EDITOR) IS A SMALL SCALE, HIGH SPEED TAPE
PROCESSOR THAT WAS DEVELOPED UNDER THE INITIAL PART
OF U.S. AIR FORCE CONTRACT AF30(602)-
3088. THE MACHINE'S FUNCTION IS TO SPEED THE
PREPARATION OF ERROR-FREE TEXT FOR COMPUTER ENTRY.
BY MEANS OF THIS DEVICE, DATA ON PERFORATED TAPES
MAY BE RAPIDLY CORRECTED OR UPDATED VIA SIMPLIFIED
PUSH-BUTTON CONTROL. THE MACHINE HAS BEEN DESCRIBED
IN DETAIL IN RADC-TDR-64-31, APRIL 1964.
THIS REPORT DESCRIBES THE RESULTS OF OPERATIONAL
TESTING OF THE TEXT EDITOR IN THE PREPARATION OF
AN EXTENSIVE MACHINE FILE OF DOCUMENT ABSTRACTS.
THE OVERALL PROCESSES OF DATA PREPARATION WERE
STUDIED AND TIME AND COST FIGURES WERE OBTAINED.
COMPARISONS OF EDITING TIMES AND COSTS WERE MADE
WITH RESPECT TO THREE OTHER SYSTEMS OF EDITING:
OFF-LINE FLEXOWRITER, ON-LINE COMPUTER TYPEWRITER,
AND ON-LINE COMPUTER WITH CRT DISPLAY. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-620 915

MARQUARDT CORP VAN NUYS CALIF

ASSOCIATIVE TAG MEMORY.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR JUL 64-APR 65.

JUL 65 72P

HAAS, RALPH W. ; BLEVIS, EARL

W. I

REPT. NO. 637/885/4266

CONTRACT: AF30 602 3471

PROJ: 5561

TASK: 550108

MONITOR: RADC .

TR-65-178

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, FEASIBILITY STUDIES), (*PHOTOELECTRIC MATERIALS, COMPUTER STORAGE DEVICES), (*FERROELECTRIC MATERIALS, COMPUTER STORAGE DEVICES), DIGITAL COMPUTERS, DATA STORAGE SYSTEMS, COMPUTER LOGIC, FERROELECTRIC CRYSTALS, SINGLE CRYSTALS, THIN FILMS (STORAGE DEVICES), ELECTRON OPTICS, SWITCHING CIRCUITS, PHOTONS

(U)

IDENTIFIERS: ASSOCIATIVE TAG MEMORY, THIN FILMS, THIN FILMS ELECTRONICS

(U)

A RESEARCH AND DEVELOPMENT PROGRAM WAS CONDUCTED TO DEMONSTRATE THE PRINCIPLE FEASIBILITY OF UTILIZING FERROELECTRIC AND PHOTOCONDUCTOR ELEMENTS TO IMPLEMENT AN ASSOCIATIVE TAG MEMORY. AN ANALYTICAL STUDY WAS PERFORMED TO PROVIDE AN INSIGHT TO THE VARIOUS DESIGN TRADEOFFS OF IMPLEMENTATION. A MATERIAL EFFORT WAS DIRECTED TOWARD PRODUCING BOTH THIN FILM AND SINGLE CRYSTAL MATERIALS. A SMALL BREADBOARD MODEL WAS CONSTRUCTED WHICH DEMONSTRATED THE ABILITY OF STRING OF PHOTOCONDUCTOR AND FERROELECTRIC ELEMENTS TO PROVIDE SIGNAL INDICATION FOR VARIOUS MATCH CONDITIONS. A LOGIC UTILIZING THIS IMPLEMENTATION WAS DEVELOPED FOR A NUMBER OF INQUIRY COMMANDS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 100296

AD-671 023

FOREIGN TECHNOLOGY DIV BRIGHT-PATTERSON AFB OHIO
MAGNETIC INTEGRATION AND DIFFERENTIATION OF ELECTRIC
SIGNALS; (U)

JUN 65 9P POZENBLAT, M. A. IKASATKIN, O. G.

REPT. NO. FTD-11-65-217
MONITOR: TT 65-63953

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
AKADEMIYA NAUK BSSR, DOKLADY, V. 13, NO 21066-7 1964.

DESCRIPTORS: (*MAGNETIC CORE STORAGE, ANALOG
COMPUTERS), (*ANALOG COMPUTERS, MAGNETIC CORE
STORAGE), MAGNETIC CORES, FERROMAGNETIC MATERIALS,
ELECTRIC CURRENT, SIGNALS, ELECTROMAGNETIC
PULSES, INTEGRATORS (COMPUTERS), DIFFERENTIATING
CIRCUITS, USSR (U)

THIS REPORT DISCUSSES THE APPLICATION OF BRANCHED
MAGNETIC CORES OF FERROMAGNETIC MATERIALS, WITH A
RECTANGULAR HYSTERESIS, TO ANALOG MEMORY DEVICES. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-624 606 9/2 20/12
RCA LABS DIV RADIO CORP OF AMERICA PRINCETON N J
CRYOELECTRIC RANDOM ACCESS MEMORY, PHASE III. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. 1, 1 MAR 64-21 AUG
65.
NOV 65 287P BURNS, L. L. ;
CONTRACT: AF30(602)-3000
PROJ: 5581
TASK: 55810A
MONITOR: NADC , TR-65-405-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-609 469.

DESCRIPTORS: (CRYOGENIC STORAGE DEVICES, THIN
FILMS(STORAGE DEVICES)), (COMPUTER STORAGE
DEVICES, DIGITAL COMPUTERS), DATA STORAGE
SYSTEMS, TIN, GRAIN STRUCTURES(METALLURGY),
GEOMETRY, SUPERCONDUCTORS, CRYOGENICS,
ELECTRICAL NETWORKS, COMPUTER LOGIC,
THERMODYNAMICS (U)
IDENTIFIERS: RANDOM ACCESS MEMORY (U)

A PROGRAM IS DISCUSSED FOR THE DEVELOPMENT OF A
LARGECAPACITY, RANDOM-ACCESS CRYOELECTRIC MEMORY.
THEORETICAL STUDIES WERE UNDERTAKEN ON THE
CRYOELECTRIC MEMORY. THESE STUDIES SHOWED THAT THE
DETAILED ELECTRODYNAMIC BEHAVIOR OF CONTINUOUS FILM
SUPERCONDUCTING MEMORIES CAN BE SPECIFIED. IT IS
SHOWN THAT THE MOST IMPORTANT SINGLE PARAMETER IS THE
UNIFORMITY OF THE GRAIN STRUCTURE IN THE TIN MEMORY
FILM ITSELF. SIZE VARIATIONS GREATER THAN 2:1 OF
THE MICROCRYSTALLITES OF TIN FORMING THE MEMORY FILM
WILL MAKE IT PRACTICALLY IMPOSSIBLE TO BUILD A PLANE
WITH A UNIFORMITY OF DRIVE CURRENTS THAT IS
SATISFACTORY FOR PROPER OPERATION IN A MEMORY STACK.
ANOTHER IMPORTANT PARAMETER IS THE GEOMETRICAL
CONTROL OF THE WIDTH OF THE DRIVE AND SENSE LINES
WHEN OTHER THAN CAVITY SENSING TECHNIQUES ARE USED.
IT IS SHOWN THAT CAVITY SENSING WORKS QUITE
SATISFACTORILY FOR SMALL STRUCTURES, BUT IS NOT
USABLE FOR LARGE STRUCTURES. TWO EXPRESSIONS WERE
DEVELOPED FROM DIFFERENT POINTS OF VIEW THAT GIVE
ESSENTIALLY THE SAME ANSWER WITH REGARD TO THE
VARIATION IN SENSE SIGNAL FOR CAVITY SENSING
STRUCTURES OVER A PLANE. A PRACTICALLY EXACT
SOLUTION TO THE OUTPUT FROM A LINE SENSE STRUCTURE IS
DEVELOPED, AND IT IS SHOWN THAT A 1-MV SENSE SIGNAL
CAN REASONABLY BE EXPECTED FOR CRYOELECTRIC MEMORY
CELLS OF A SIZE SUCH THAT 10,000 CAN BE PUT IN ONE
SQUARE INCH. THE VORTEX THEORY OF SUPERCONDUCTIVE (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-629 788 9/2
NAVAL ORDNANCE LAB WHITE OAK MD
THE DISAC MAGNETIC TAPE SYSTEM AND PERIPHERAL
EQUIPMENT CONTROLS. (U)
DEC 65 114P PRYOR, C. N. DAVIS, R. H. I
REPT. NO. NOLTR-64-158,
TASK: A342-12000/210-1/F101-10-02,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-610 052.

DESCRIPTORS: (*DIGITAL COMPUTERS, SIMULATION),
(*CAPON SYSTEMS, SIMULATION), (*MAGNETIC TAPE;
DIGITAL COMPUTERS), INPUT-OUTPUT DEVICES,
PUNCHED CARDS, PUNCHED TAPE (U)
IDENTIFIERS: DISAC (U)

THE REPORT DESCRIBES THE CHARACTERISTICS AND
OPERATION OF THE DIGITAL INPUT-OUTPUT DEVICES
ATTACHED TO THE DISAC SYSTEM. DETAILED OPERATING
CHARACTERISTICS OF EACH DEVICE ARE GIVEN, FROM THE
VIEWPOINT OF THE USER. DESCRIPTIONS AND COMPLETE
DIAGRAMS OF ALL CONTROL CIRCUITRY ARE GIVEN TO
FACILITATE SYSTEM MAINTENANCE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-630 918 5/1 9/2 17/9 13/13
20/12

LINCOLN LAB MASS INST OF TECH LEXINGTON
GENERAL RESEARCH.

DESCRIPTIVE NOTE: QUARTERLY TECHNICAL SUMMARY REPT. 1
NOV 65-31 JAN 66.

FEB 66 61P FRICK, FREDERICK C. INEDZEL, V.
ALEXANDER, DODD, STEPHEN H. HERLIN, MELVIN A. I
FREEDMAN, JEROME I

CONTRACT: AF 19(628)-5167.

PROJ: AF-649L

MONITOR: ESO, TOR-66-21

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-627 520.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, SCIENTIFIC
RESEARCH), (+RADAR, SCIENTIFIC RESEARCH),
(+ENGINEERING, SCIENTIFIC RESEARCH), (+SOLID
STATE PHYSICS, SCIENTIFIC RESEARCH), DIGITAL
COMPUTERS, COMPUTER STORAGE DEVICES, PSYCHOLOGY,
CONTROL SYSTEMS, SPACE SURVEILLANCE SYSTEMS,
RADIO ASTRONOMY, MOON, PLANETS, MICROWAVE
EQUIPMENT, MICROWAVE AMPLIFIERS, MILLIMETER
WAVES, ANTENNA FEEDS, RADAR ANTENNAS,
SEMICONDUCTOR DEVICES, OPDAR, RADAR STATIONS,
GUIDED MISSILE LAUNCHERS, OPTICS,
MATERIALS

(U)

SUMMARIES ARE GIVEN OF PROGRESS AND RESULTS IN THE
FOLLOWING RESEARCH AREAS: DIGITAL COMPUTERS
(COMPUTER SYSTEMS, CIRCUIT DEVELOPMENT, MAGNETIC
FILM ENGINEERING, SYSTEM PROGRAMMING AND
APPLICATIONS); COMPUTER COMPONENTS (MAGNETIC
FILMS, OPTICS, ELECTRON TRANSPORT); PSYCHOLOGY
(MAN-COMPUTER INTERACTION, HUMAN INFORMATION
PROCESSING); CONTROL RESEARCH (COMPUTATION CENTER
DEVELOPMENT, HYBRID COMPUTATIONAL FACILITY);
SURVEILLANCE TECHNIQUES (SPACE SURVEILLANCE, LUNAR
STUDIES, PLANETARY STUDIES, ATMOSPHERIC STUDIES,
RADIO ASTRONOMY); MICROWAVE COMPONENTS (HAYSTACK
MICROWAVE COMPONENTS, SOLID-STATE AMPLIFIERS,
MILLIMETER-WAVELENGTH PROGRAM, MODIFICATION TO
TRADEX ERROR HORNS); MECHANICAL ENGINEERING
(HAYSTACK, SOLID STATE RESEARCH, LASER RADAR,
STRUCTURES RESEARCH); PHYSICAL PLANT ENGINEERING
(HAYSTACK HILL, MILLSTONE HILL); CONTROL
SYSTEMS (NIKE-AJAX OPTICAL MOUNT, HAYSTACK);
SOLID STATE DEVICE RESEARCH; OPTICAL TECHNIQUES AND
DEVICES; MATERIALS RESEARCH; PHYSICS OF SOLIDS.

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-624 819 5/1 9/2 17/2.1 17/9
20/12

LINCOLN LAB MASS INST OF TECH LEXINGTON
GENERAL RESEARCH.

DESCRIPTIVE NOTE: QUARTERLY TECHNICAL SUMMARY REPT., (U)

MAY 66 52P FRICK, FREDERICK C. ;

NEDZEL, V. ALEXANDER ; DODD, STEPHEN H. ;

HERLIN, MELVIN A. ; FREEDMAN, JEROME ;

CONTRACT: AF 19(628)-9167,

PROJ: AF-649L,

MONITOR: ESD TR-66-209

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-620 918.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, SCIENTIFIC
RESEARCH), (+RADAR, SCIENTIFIC RESEARCH),
(+ENGINEERING, SCIENTIFIC RESEARCH), (+SOLID
STATE PHYSICS, SCIENTIFIC RESEARCH), DIGITAL
COMPUTERS, COMPUTER STORAGE DEVICES, PSYCHOLOGY,
CONTROL SYSTEMS, SPACE SURVEILLANCE SYSTEMS,
RADIO ASTRONOMY, PLANETS, MICROWAVE EQUIPMENT,
LASERS, SEMICONDUCTOR DEVICES, RADAR ANTENNAS (U)
IDENTIFIERS: HAYSTACK HILL ANTENNAS, HILLSTONE
RADAR (U)

SUMMARIES ARE GIVEN OF PROGRESS AND RESULTS IN THE
FOLLOWING RESEARCH AREAS: DIGITAL COMPUTERS
(COMPUTER SYSTEMS, CIRCUIT DEVELOPMENT, MAGNETIC
FILM ENGINEERING, SYSTEM PROGRAMMING AND
APPLICATIONS); COMPUTER COMPONENTS (MAGNETIC
FILMS, OPTICS, ELECTRON TRANSPORT, ADVANCED
CIRCUITS); PSYCHOLOGY (ON-LINE COMPUTING SERVICES
FOR SCIENTISTS AND ENGINEERS, HUMAN INFORMATION
PROCESSING, QUANTITATIVE METHODS); COMPUTER SYSTEMS
(COMPUTATION CENTER DEVELOPMENT, HYBRID
COMPUTATIONAL FACILITY); SURVEILLANCE TECHNIQUES
(OPERATION, MAINTENANCE, AND IMPROVEMENTS, SPACE
SURVEILLANCE, LUNAR STUDIES, PLANETARY STUDIES,
ATMOSPHERIC STUDIES, RADIO ASTRONOMY, SPACE
COMMUNICATION); MICROWAVE COMPONENTS
(INTRODUCTION, HAYSTACK MICROWAVE COMPONENTS,
SOLID-STATE AMPLIFIERS, VHF MODIFICATION TO
TRADEX ERROR HORNS); MECHANICAL ENGINEERING
(HAYSTACK, HILLSTONE, SOLID STATE RESEARCH, LASER
RADAR, STRUCTURES RESEARCH); SOLID STATE DEVICE
RESEARCH, OPTICAL TECHNIQUES AND DEVICES, MATERIALS
RESEARCH, PHYSICS OF SOLIDS. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-635 229 9/2 5/8
HUDSON LABS COLUMBIA UNIV DOBBS FERRY N Y
FLEXOWRITER/DIOA SYSTEM.
DESCRIPTIVE NOTE: TECHNICAL REPT.
FER 66 91P AMANN, CHARLES I
KLERER, MELVIN I
REPT. NO. TR-124, CU-149-66-ONR-266-PHYS
CONTRACT: NONR-266(84),

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INPUT-OUTPUT DEVICES;
PROGRAMMING(COMPUTERS), PUNCHED TAPE;
TYPEWRITERS, MODULES(ELECTRONIC), COMPUTER
LOGIC, DATA PROCESSING SYSTEMS, COMPUTERS
IDENTIFIERS: FLEXOWRITERS

(U)

(U)

THE REPORT DOCUMENTS THE HARDWARE USED TO INTERFACE
THE FRIDEN FLEXOWRITER TO THE GE-225 COMPUTER
IN USE AT HUDSON LABORATORIES. THIS HARDWARE
CAN ALSO BE USED AS A GENERAL PURPOSE INTERFACE FOR
LOW SPEED DATA TRANSMISSION. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-640 427 9/5 9/2
ILLINOIS UNIV URBANA COORDINATED SCIENCE LAB
MATRIX SWITCHES AND ERROR CORRECTING CODES FROM BLOCK
DESIGNS, (U)
AUG 66 48P BAHL, LALIT RAI I
REPT. NO. R-314,
CONTRACT: DA-28-043-AMC-00072(E), NSF-GK-690
PROJ: DA-20014501821F,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SWITCHING CIRCUITS, *MAGNETIC CORE
STORAGE), ERRORS, COMPUTERS, CODING, DESIGN,
MATRIX ALGEBRA, CORRECTIONS, COMBINATORIAL
ANALYSIS (U)

METHODS OF OBTAINING MATRIX SWITCHES FROM BLOCK
DESIGNS WERE FORMULATED BY SINGLETON AND NEUMANN.
THE FIRST PART OF THE REPORT EXTENDS SINGLETON'S
METHOD FOR DESIGNING UNIPOLAR SWITCHES TO THE DESIGN
OF BIPOLAR SWITCHES. A NEW CLASS OF LOW NOISE
SWITCHES IS OBTAINED BY PERMUTATION OF THE WINDING
MATRIX OF NOISELESS SWITCHES AND IT IS SHOWN HOW
THESE NEW SWITCHES ARE RELATED TO BLOCK DESIGNS.
THE LATTER PART OF THE REPORT IS CONCERNED WITH
METHODS OF OBTAINING ERROR DETECTING AND ERROR
CORRECTING CODES FROM BLOCK DESIGNS. SOME OF THESE
CODES ARE FOUND TO BE OPTIMAL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 492 9/2

CARSON LABS INC BRISTOL CONN

OPTICAL MATRIX MULTIPLIER, (U)

DESCRIPTIVE NOTE: FINAL REPT., JUL 65-JUN 66.

AUG 66 24P CARSON, ARTHUR N. I

CONTRACT: AF 19(628)-4211.

PROJ: AF-4641,

TASK: 464104,

MONITOR: AFCL

66-619

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-617 961.

DESCRIPTORS: (ANALOG COMPUTERS, COMBINATORIAL ANALYSIS), (COMPUTER STORAGE DEVICES, CRYSTALS), COLOR CENTERS, MATRIX ALGEBRA, OPTICAL PHENOMENA, COMPUTER LOGIC, DATA PROCESSING SYSTEMS, HALIDES, LASERS, SCANNING (U)

IDENTIFIERS: OPTICAL COMPUTERS, ANALOG MULTIPLIERS (U)

DEVELOPMENT WORK HAS BEEN PERFORMED ON A PARALLEL; ANALOG, MATRIX MULTIPLIER FOR THE RAPID MULTIPLICATION OF VERY LARGE CAPACITY MATRICES USING OPTICAL STORAGE OF MATRIX ELEMENTS IN A COLORED CRYSTAL MEMORY AND PARALLEL OPTICAL MULTIPLICATION. THE ORIGINAL CONCEPT FOR THE SYSTEM, BASED ON THE USE OF THREE COLORED CRYSTALS (TWO FOR MATRIX-ELEMENT STORAGE, AND ONE FOR MULTIPLICATION) AND THREE WAVELENGTHS OF LIGHT FOR STORAGE, READOUT, AND MULTIPLICATION, RESPECTIVELY, WAS MODIFIED AND SIMPLIFIED. THE FINAL CONCEPT USED ONLY TWO CRYSTALS TO PERFORM THE DUAL FUNCTION OF STORAGE AND MULTIPLICATION, AND TWO COLORS OF LIGHT. IT ALSO INCORPORATED THE TECHNIQUE OF CONTINUOUS MONITORING DURING STORAGE TO ELIMINATE THE REQUIREMENT FOR LINEARITY OF COLOR CONVERSION DURING STORAGE. THE PRINCIPAL FINAL DIFFICULTY AT COMPLETION OF THE CONTRACT WAS THE INABILITY TO DEMONSTRATE ADEQUATE COLOR CONVERSION RATES IN WRITING MATRIX ELEMENTS INTO THE COLORED CRYSTAL TO ASSURE AN INTERESTING PRACTICAL DEVICE. SEVERAL PROMISING AVENUES FOR REMOVING THIS LIMITATION WITH FURTHER DEVELOPMENT WERE DESCRIBED. A LABORATORY BENCH-MODEL MATRIX MULTIPLIER WAS CONSTRUCTED AND USED TO DEMONSTRATE MATRIX ELEMENT MONITORING AND MULTIPLICATION. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 599 9/2 12/1
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD
DIFFERENTIAL ANALYZER-ELECTRICAL ASPECTS OF
OPERATION, (U)
DEC 47 66P LYNCH, JEREMIAH I
REPT. NO. 694,
PROJ: TB2-0007,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: 1. ANALOG COMPUTERS, ELECTRICAL
EQUIPMENT; OPERATION; INTEGRATORS (COMPUTERS),
DIFFERENTIAL EQUATIONS, ELECTRIC MOTORS,
AMPLIFIERS (U)

I. GENERAL DESCRIPTION OF ELECTRICAL COMPONENTS OF
ANALYZER (A DEVICE FOR MECHANICALLY SOLVING ORDINARY
DIFFERENTIAL EQUATIONS): INTEGRATORS AND
ASSOCIATED CIRCUITS, TABLES AND ASSOCIATED CIRCUITS,
INDEPENDENT-VARIABLE MOTOR AND ITS CONTROLS, PRINTER,
AND AUXILIARY UNITS. II. EXPLANATION OF CIRCUIT
DIAGRAMS: BALANCER CONTROL CIRCUIT, CIRCUITS
CONNECTING THE BALANCER CONTROL AND AMPLIDYNE
CABINETS TO THE MACHINE, CONNECTIONS AT INTEGRATOR
AND TABLE JUNCTION BOXES, AMPLIFIER AND ASSOCIATED
CIRCUITS, INDEPENDENT-VARIABLE CONTROL PANEL, PRINTER
CIRCUITS, AND SAFETY DEVICES. III. PROCEDURES TO
BE FOLLOWED BY THE OPERATORS IN OPERATION AND REPAIR.
IV. TROUBLE SHOOTING ON AMPLIFIERS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000394

AD-644 429 9/2 9/2
NORTHWESTERN UNIV EVANSTON ILL INFORMATION-PROCESSING AND
CONTROL SYSTEMS LAB
A CRYOGENIC ASSOCIATIVE MEMORY SYSTEM FOR INFORMATION
RETRIEVAL. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

NOV 66 8P YAU, S. S. IYANG, C. C. I
REPT. NO. TR-66-106
CONTRACT: N00014-66-C-0020, AF-AFOSR-90-65

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN PROCEEDINGS OF THE
NATIONAL ELECTRONICS CONFERENCE V22 P764-9 1966.

DESCRIPTORS: (+DATA STORAGE SYSTEMS;
CRYOGENICS), (+INFORMATION RETRIEVAL; DATA
STORAGE SYSTEMS), LOGIC CIRCUITS,
PERFORMANCE(ENGINEERING), OPERATION (U)

THE PAPER PRESENTS A CRYOGENIC ASSOCIATIVE MEMORY
SYSTEM WHICH CAN PERFORM BOTH NON-ORDERED AND ORDERED
RETRIEVAL. SINCE THE OPERATIONS OF CRYOGENIC
CIRCUITS ARE SLOWER THAN THAT OF MAGNETIC CORES AND
CUTPOINT CELLS, THE SPEED APPEARS TO BE THE MAIN
PROBLEM OF ALL CRYOGENIC ASSOCIATIVE MEMORY SYSTEMS.
ATTEMPTS WERE MADE TO INCREASE THE OPERATING SPEED
IN VARIOUS ASPECTS, SUCH AS MINIMIZING THE CIRCUIT
INDUCTANCE, REDUCING THE NUMBER OF STAGE DELAYS, ETC.
HOWEVER, FURTHER RESEARCH IN THE ORGANIZATION
DESIGN SUCH AS THE DEVELOPMENT OF A HIGHER SPEED
CIRCUIT FOR SUBSTITUTING THE TWO-RAIL LADDER NETWORK
IS STILL REQUIRED TO INCREASE THE SPEED OF THE
SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-647 247 9/2
NAVAL AIR DEVELOPMENT CENTER JOHNSTOWN PA AERO-
ELECTRONIC TECHNOLOGY DEPT
NONDESTRUCTIVE READOUT (NDRO) FROM THIN MAGNETIC
FILMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
JAN 67 45P GREENBERG, S. OLIVERI, P. I
REPT. NO. NADC-AE-6640

UNCLASSIFIED REPORT

DESCRIPTORS: (1) THIN FILM STORAGE DEVICES,
RESISTANCE (ELECTRICAL), MAGNETIC FIELDS,
DATA STORAGE SYSTEMS,
RELIABILITY (ELECTRONICS), FILMS, INPUT-
OUTPUT DEVICES, FEASIBILITY STUDIES, INFORMATION
RETRIEVAL

(U)

IDENTIFIERS: MAGNETORESISTIVE EFFECT, THIN FILMS,
THIN FILMS ELECTRONICS

(U)

FIVE SOLID STATE PHENOMENA WERE CONSIDERED FOR
POSSIBLE USE IN NONDESTRUCTIVE READOUT (NDRO) FROM
THIN MAGNETIC FILM MEMORIES. THE PHENOMENON OF
MAGNETORESISTANCE IN MAGNETIC FILMS WAS CHOSEN AS THE
MOST PROMISING, AND STUDIES WERE MADE OF THIS EFFECT.
EXPERIMENTAL STUDIES OF THE SWITCHING
CHARACTERISTICS OF CONFIGURATIONS INVOLVING MAGNETIC
FILMS AND OTHER DEVICES, SUCH AS TUNNEL DIODES, WERE
ALSO MADE. SEVERAL EXPERIMENTAL NDRO RANDOM
ACCESS MEMORIES WERE BUILT TO DEMONSTRATE THE
FEASIBILITY OF USING MAGNETORESISTANCE. THE
ADVANTAGES OF THESE MEMORIES WERE LOW DRIVE CURRENTS
AND GOOD S/N RATIO. A NEW TECHNIQUE FOR AN
ASSOCIATIVE MEMORY WAS CONCEIVED, AND AN EXPERIMENTAL
MODEL WAS BUILT TO DEMONSTRATE FEASIBILITY.

(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-640 752 9/2 22/2
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
LARGE CAPACITY LASER MEMORY FOR SPACEBORNE
COMPUTERS.
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,
FEB 67 11P DLUGATCH, I. INANUS, S. I
REPT. NO. SP-2665

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTER STORAGE DEVICES,
+LASERS), (+COMPUTERS, SPACEBORNE),
SCIENTIFIC SATELLITES, COMMUNICATION
SATELLITES(ACTIVE), DESIGN

(U)

THE REPORT DISCUSSES THE NECESSITY FOR A SPACEBORNE
COMPUTER MEMORY OF AT LEAST 10 TO THE 7TH POWER BIT
CAPACITY. IT IS SHOWN THAT SUCH A DEVICE COULD
MINIMIZE COMPUTER HARDWARE AND, AT THE SAME TIME,
MAKE FEASIBLE SUCH DEVICES AS SPACEBORNE RANDOM-
MULTIPLE-ACCESS AND SYNERGETIC SATELLITES.
(AUTHOR)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800796

AD-649 241 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
MEMORY UNIT, (U)
JAN 67 6P LYUBCHANSKII, M. S. I
REPT. NO. FTD-HT-67-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ZAPOMINAYUSHCHEE USTROISTVO,
UNEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 178 167.
APPL. 912745/26-24, 20 JUL 64.

DESCRIPTORS: (=COMPUTER STORAGE DEVICES,
*COMPUTERS), MAGNETIC FIELDS, WINDING,
ORIFICES, USSR (U)

A MEMORY DEVICE CONTAINING MATRICES OF MAGNETIC
MULTIPLE-ORIFICE ELEMENTS WITH INTERROGATION WINDINGS
PASSED THROUGH SOME OF THE OPENINGS OF THE ELEMENTS,
OUTPUT WINDINGS PASSED THROUGH OTHER OPENINGS OF THE
ELEMENTS, AND BIAS WINDINGS PASSED THROUGH THE SAME
OPENINGS AS THE INTERROGATION WINDINGS WHICH HAS THE
DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF
SIMPLIFYING THE SCHEME OF CONTROL OF THE DEVICE IN
EACH MATRIX DIVIDED IN TWO, THE WINDINGS OF
INTERROGATION ARE PASSED THROUGH IN ONE HALF IN
ACCORDANCE WITH THE BIAS WINDING, AND IN THE OTHER IN
THE OPPOSITE DIRECTION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800794

AD-A49 342 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
BUFFER MEMORY DEVICE. (U)
JAN 67 6P GORSHKOV, A. P. 1
KIRPICHNIKOV, V. M. ISTUNOV, M. N. 1
REPT. NO. FTD-MT-67-7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: BUERNOE ZAPOHINAYUSCHEE
USTROISTVO, UNEDITED ROUGH DRAFT TRANS. OF PATENT
(USSR) 179 095, APPL. 907407/26-24, 22 JUN 64.

DESCRIPTORS: (+COMPUTER STORAGE DEVICES,
COMPUTERS), MAGNETIC CORES, QUADRATIC
PROGRAMMING, GENERATORS, USSR (U)

A BUFFER MEMORY DEVICE BASED ON FERRITE CORES WHICH
CONTAINS QUADRATIC MATRICES WITH HORIZONTAL BUSES,
VERTICAL BUSES, WHICH HAS THE DISTINGUISHING FEATURE
THAT, FOR THE PURPOSE OF SIMPLIFYING THE DEVICE, IT
CONTAINS A GENERATOR CONNECTED UP TO HORIZONTAL BUSES
OF A MATRIX, WHICH ASSURES THEIR SEQUENTIAL SORTING,
GENERATORS OF REGULATED FIGURES CONNECTED TO VERTICAL
BUSES, AND A GENERATOR OF READING CONNECTED TO
DIAGONAL BUSES ASSURING THEIR SEQUENTIAL SORTING.
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-549 414 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
STORAGE DEVICE, (U)
JAN 67 6P STAROS, F. G. BERG, I. V.
IKREININ, S. I. ILASHEVSKII, R. A. ;
MAKSIMOV, M. N. ;
REPT. NO. FTD-HT-67-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ZAPOMINAYUSHCHEE USTROISTVO,
UNEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 178 178,
APPL. 940357/26-24, 25 JAN 68.

DESCRIPTORS: (*DATA STORAGE SYSTEMS,
*COMPUTERS), COMPUTER STORAGE DEVICES,
MICROMINIATURIZATION(ELECTRONICS), DECODING,
NUMBERS, WIRE, METAL PLATES, USSR (U)

A BRIEF DESCRIPTION OF A MEMORY DEVICE BASED ON
MULTIPLE-ORIFICE FERRITE PLATES WHICH CONTAINS NUMBER
PLATES AND THE PLATE OF A DECODER, WHICH HAS THE
DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF
SIMPLIFYING THE MANUFACTURE AND THE
MICROMINIATURIZATION OF THE DEVICE, THE NUMBER WIRE
MADE BY THE METHOD OF PRINTING ON THE NUMBER PLATE IS
JOINED WITH THE WIRE PASSING THROUGH TWO OPENINGS OF
THE DECODER, AND THE NUMBER PLATES TOGETHER WITH THE
PLATE OF THE DECODER ARE PLACED IN A CASSETTE COATED
WITH A HEAT REACTIVE COMPOUND. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-649 416 9/2 9/1
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
SHIFT REGISTER. (U)
JAN 67 7P KHVEDYNICH, V. P. 1
POLIKARPOV, P. N. 1
REPT. NO. FTD-HT-67-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
PATENT (USSR) 176 720, APPL. 910097/26/24 8 JUL 64.

DESCRIPTORS: (*SHIFT REGISTERS, *MAGNETIC
CORES), COMPUTER LOGIC, WINDING, COMPUTERS,
COMPUTER STORAGE DEVICES, USSR (U)

A SHIFT REGISTER BASED ON MAGNETIC CORES WHICH HAS
THE DISTINGUISHING FEATURE THAT FOR THE PURPOSE OF
INCREASING THE RAPIDITY OF ITS WORKING, EXPANSION OF
THE TEMPERATURE OPERATING RANGE, AND WIDENING OF THE
TOLERANCES FOR CHANGE IN THE PARAMETERS OF THE PULSES
OF THE FEED CURRENTS EACH PRIMARY ELEMENT OF THE
REGISTER CONTAINS TWO MEMORY CORES HAVING ON ONE CORE
A FEED (MOVEMENT) WINDING AND AN INPUT WINDING
THAT ARE COUNTER TO EACH OTHER, THE OTHER CORE BEING
THE STANDARDIZING ONE WITH A SHIFT WINDING JOINED BY
A LOOP OF CONNECTION WITH THE MEMORY CORES.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-649 417 9/2 12/7
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
PNEUMATIC LONG-TERM MEMORY CELL FOR DISCRETE
SIGNALS. (U)
JAN 67 7P FEDOSEEV, R. YU. ;
GOLOVANOV, I. O. ;
REPT. NO. FTD-HT-67-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
PATENT (USSR) 168 543, APPL. 859097/26-24. NO SEP
67.

DESCRIPTORS: (*COMPUTER STORAGE DEVICES, DATA
STORAGE SYSTEMS), (*PNEUMATIC DEVICES, DATA
STORAGE SYSTEMS), COMPUTERS, DESIGN, SIGNALS,
RUSS, USSR (U)

A BRIEF DESCRIPTION IS GIVEN OF A PNEUMATIC LONG-
TERM MEMORY CELL FOR DISCRETE SIGNALS WHICH CONTAINS
TWO PERPENDICULARLY ARRANGED SLAVE MECHANISMS
CONVERTING PRESSURE INTO SHIFTING AND A LOCK, WHICH
HAS THE DISTINGUISHING FEATURE THAT, FOR THE PURPOSE
OF SIMPLIFYING THE DEVICE AND IMPROVING THE
DEPENDABILITY, THE LOCK IS DESIGNED IN THE FORM OF A
PROJECTION LOCATED ON A ROD OF THE SLAVE MECHANISM
AND TWO SLOTS ARRANGED ON THE ROD OF THE OTHER SLAVE
DEVICE. ENGLISH TRANSLATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-650 298 9/2 12/10
DAVID TAYLOR MODEL BASIN WASHINGTON D C
A FUNCTION CONTROL UNIT FOR USE WITH THE BUREAU OF
SHIPS ANALOG-COMPUTER BUSAC, (U)
MAY 54 22P DAVIS, HENRY B. O. I
REPT. NO. DTMB-899

UNCLASSIFIED REPORT

DESCRIPTORS: (+FUNCTIONS, CONTROL SYSTEMS),
(+INPUT-OUTPUT DEVICES, ANALOG COMPUTERS),
WAVEFORM GENERATORS, MARINE ENGINEERING, SHIP
HULLS, THEORY, OPERATION (U)

A FUNCTION CONTROL UNIT WAS DESIGNED AS A COMPONENT INSTRUMENT OF THE BUREAU OF SHIPS ANALOG COMPUTER (BUSAC). IT IS INTENDED FOR USE WITH THE BUSAC CURVE FOLLOWER, WHICH PRODUCES A FUNCTION REPRESENTING CROSS SECTIONS OF THE SHIP'S HULL. THE FUNCTION CONTROL UNIT SERVES TO MODIFY AND SUPPLEMENT THIS FUNCTION IN A KNOWN AND CONTROLLABLE MANNER. FOR EXAMPLE, IT CAN OPERATE UPON THE INPUT FUNCTION TO PRODUCE A WAVEFORM SIMULATING STATIC OR DYNAMIC CONDITIONS UNDER VARIOUS DEGREES OF LOADING, HEAVE, ROLL, OR PITCH. THIS REPORT DISCUSSES THE DESIGN AND PRINCIPLE OF OPERATION OF THE INSTRUMENT, WHICH IS KNOWN AS THE TMB TYPE 161-A FUNCTION CONTROL UNIT, AND GIVES SCHEMATIC CIRCUIT DIAGRAMS, ADJUSTMENT PROCEDURES, AND OPERATING INSTRUCTIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000396

AD-850 841 9/2
COLUMBIA UNIV DOBBS FERRY N Y HUDSON LABS
HARDWARE DOCUMENTATION OF AN 8-BUTTON KEYBOARD. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JAN 47 46P AMANN, CHARLES IKLERER, MELVIN

REPT. NO. TR-127
CONTACT: NONR-266(84)

UNCLASSIFIED REPORT

DESCRIPTORS: (*TYPEWRITERS; *INPUT-OUTPUT
DEVICES), COMPUTERS, AUTOMATIC, WIRING
DIAGRAMS, PROGRAMMING, COMPUTERS, ELECTRONIC
SWITCHES, ELECTRONIC RELAYS (U)
IDENTIFIERS: FLEXOWRITERS (U)

IF ONE OF EIGHT BUTTONS IS DEPRESSED THIS DEVICE
WILL EMIT A SERIAL STRING OF PARALLEL 8-BIT CODES TO
CAUSE TO SET OF TYPING ACTIONS IN AN INPUT-OUTPUT
TYPEWRITER TERMINAL. THE 'PROGRAM' FOR EACH BUTTON
IS WIRED IN AND SEQUENCED BY STEPPING SWITCHES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000296

AD-652 682 9/2 17/2
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD
BRLESC I AND II MEMORY CROSSBAR SWITCH, A HIGH SPEED
DIGITAL COMMUNICATION SYSTEM. (U)
DESCRIPTIVE NOTES: MEMORANDUM REPT.,
MAR 67 29P KLAIR, G. R. IHERALD, G.
L. I
REPT. NO. BRL-MR-1827
PROJ: RDT/E-1P922801A2R7

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS, MULTIPLE
OPERATION), (COMMUNICATION SYSTEMS, DESIGN),
MICROMINIATURIZATION (ELECTRONICS), TIME
SHARING, COMPUTER LOGIC, PRINTED CIRCUITS, DATA
STORAGE SYSTEMS, DIGITAL COMPUTERS (U)
IDENTIFIERS: BRLESC COMPUTER, MEMORY CROSSBAR,
MULTIPROCESSING (U)

THE REPORT DESCRIBES THE DESIGN AND CONSTRUCTION OF
A MICRO CIRCUIT HIGH SPEED DIGITAL COMMUNICATION
SWITCHING SYSTEM TO BE USED IN A MULTI PROCESSOR
COMPUTER SYSTEM. INCLUDED ARE APPLICATIONS TO TIME
SHARING WITH MEMORY PROTECT FEATURES, AND BLOCK
TRANSFER OF INFORMATION BETWEEN PROCESSORS AND OFF
LINE EQUIPMENT. A DETAILED DESCRIPTION OF
OPERATION AND LOGIC IS PRESENTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-655 404 9/5 9/2
TEXAS UNIV AUSTIN DEPT OF ELECTRICAL ENGINEERING
FILTER DESIGN FOR THE AVERAGE RESPONSE COMPUTER, (U)
67 IIP FLAKE, ROBERT H. I
COX, JEROME R. ; JRI
CONTRACT: AF-AFOSR-766-67
PROJ: AF-4751
MONITOR: AFOSR 67-1623

UNCLASSIFIED REPORT
AVAILABILITY: PUBLISHED IN 1967 SWIEEEO RECORD
NF-72 P11-5-1-9 APR 19 1967.

DESCRIPTORS: (*COMPUTERS, RESPONSE), (*LOW-
PASS FILTERS, PERFORMANCE(ENGINEERING)),
DESIGN, SPECIFICATIONS, BIOLOGY, MEDICINE,
SAMPLING, INTERPOLATION, CALIBRATION (U)

PERFORMANCE AND DESIGN SPECIFICATIONS FOR FILTERS
USED IN THE AVERAGE RESPONSE COMPUTER ARE DISCUSSED.
BOTH THE OPTIMUM WIENER FILTER AND THE SIMPLE
LOW-PASS R-C FILTER ARE CONSIDERED, AND THEIR
RELATIVE PERFORMANCE IS COMPARED FOR THIS SPECIAL,
BIOMEDICAL COMPUTER APPLICATION. DESIGN CURVES ARE
PRESENTED FOR THE R-C FILTER PARAMETERS WHICH
MINIMIZE THE ROOT-MEAN-SQUARED ERROR WHEN THIS FILTER
IS EMPLOYED IN THE AVERAGE RESPONSE COMPUTER. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 046 9/2 9/1
LABORATORY FOR ELECTRONICS INC BOSTON MASS ELECTRONICS
DIV
RESEARCH IN FERROMAGNETICS, PART II. (U)
DESCRIPTIVE NOTE: FINAL REPT. (ITEM 2). APR 69-MAR
66.
SEP 67 109P SPAIN, ROBERT J. I
GATTAREL, CLAUDE P. I JAUVYIS, HARVEY I. I
MARINO, MICHAEL J. I PEOPLES, PATRICK J. I
CONTRACT: AF 19(628)-4197
PROJ: AF-5622
TASK: 562207
MONITOR: AFCRL 67-0209-REV

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES AD-655 059, FINAL REPT.
SEE ALSO PART I, AD-694 601.

DESCRIPTORS: (*FERROMAGNETIC MATERIALS, FILMS);
(*COMPUTER STORAGE DEVICES, FILMS), MAGNETIC
PROPERTIES, THIN FILM STORAGE DEVICES, SHIFT
REGISTERS, FEASIBILITY STUDIES, COMPUTER LOGIC,
LOGIC CIRCUITS (U)
IDENTIFIERS: THIN FILMS ELECTRONICS (U)

WORK HAS BEEN CARRIED OUT ON ASCERTAINING THE
FEASIBILITY OF A DTPL PUSH DOWN LIST MEMORY.
INVESTIGATIONS WERE MADE OF THE BASIC PUDL THIN
FILM SHIFT REGISTER STRUCTURE AS WELL AS THE
ASSOCIATED CONDUCTOR PATTERNS. DRIVE AND SENSE
ELECTRONICS HAVE BEEN DESIGNED AND BREADBOARDED AND A
NUMBER OF SYSTEM DESIGNS HAVE BEEN STUDIED AND
EVALUATED. ADDITIONAL WORK IS STILL REQUIRED FOR
THE OPTIMIZATION OF THE THIN FILM ELEMENTS AND FOR
THE COMPLETION OF THE FEASIBILITY MODEL.
(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-658 121 9/2 14/9
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LAB
COORDINATE READER AND CARD PUNCH OR TABULATOR, (U)
SEP 54 19P VANHAAGEN, RICHARD H. I
REPT. NO. CF-2275
CONTRACT: NORD-720.

UNCLASSIFIED REPORT

DESCRIPTORS: (+FILM READERS. +DATA PROCESSING
SYSTEMS), OPERATION, MAINTENANCE, PUNCHED
CARDS

(U)

THE EQUIPMENT WAS DESIGNED TO BE USED IN EITHER OF TWO MODES AS DICTATED BY THE REQUIREMENTS OF THE INFORMATION WHICH IS TO BE TRANSCRIBED. THE FIRST MODE IS ONE OF READING RELATIVE VALUES OF COORDINATES WHICH ARE RANDOMLY OR OTHERWISE SCATTERED ABOUT, SUCH AS PARTICLES IN A FLUID. THE POSITIONS OF THE PARTICLES MAY CHANGE AS A FUNCTION OF TIME, AND THE SUCCESSIVE READINGS WILL SHOW THEIR BEHAVIOR AND CAN BE MATHEMATICALLY ANALYZED. THIS MAY BE RECORDED ON A NUMBER OF SUCCESSIVE SINGLE-EXPOSURE FRAMES OF A PHOTOGRAPHIC FILM, OR ON ONE FRAME WITH SUCCESSIVE EXPOSURES. IN EACH OF THESE CASES BOTH COORDINATE VALUES ARE UNKNOWN. IN THE SECOND MODE, READINGS ARE MADE AT PRESCRIBED INTERVALS ALONG ONE AXIS, SUCH AS IN THE CONVERSION OF STRIP-CHART RECORDS AND OSCILLOGRAPH RECORDS TO PUNCHED CARDS, WHERE EQUAL STEPS ALONG ONE (USUALLY THE HORIZONTAL) AXIS ARE DESIRED, THE POSITION OF THE OTHER COORDINATE BEING THE INTERSECTION OF THE FIRST ONE AND THE RECORDED TRACE. INITIAL READ-OUT OF CALIBRATION TRACES ALLOWS AN INTERPOLATION BY MACHINE CALCULATION WHICH PRODUCES LINEARIZED DATA.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 189 9/2 9/5
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS MADRID
(SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMATICA
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL
DEVICES. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,
JUL 60 115P SANTESHASES, J. GARCIA I
REPT. NO. TN-3
CONTRACT: AF 61(514)-1224

UNCLASSIFIED REPORT

DESCRIPTORS: (*COMPUTERS, *MAGNETIC RESONANCE),
(*CONTROL SYSTEMS, MAGNETIC RESONANCE),
(*ELECTRICAL NETWORKS, MAGNETIC RESONANCE),
BIBLIOGRAPHIES, VARACTOR DIODES, INDUCTANCE,
COMPUTER LOGIC, INVERTER CIRCUITS, LOGIC
CIRCUITS, SHIFT REGISTERS, RELAXATION OSCILLATORS (U)

IN CHAPTER 1 THE LIST OF BIBLIOGRAPHY GIVEN IN THE
TWO PREVIOUS TECHNICAL NOTES HAS BEEN EXTENDED UP
TO SEVENTY NINE PAPERS. IN THIS LIST A NEW GROUP
OF PAPERS CORRESPONDING TO THE USE OF VARIABLE
CAPACITANCE DIODES IN NON-LINEAR RESONANT CIRCUITS,
HAS BEEN MADE UP. CHAPTER 2 DEALS ON THE
FERRORESONANT CIRCUITS DEVELOPED. SOME NEW SYSTEMS
TO OBTAIN THE TRANSFER OF INFORMATION BETWEEN
FERRORESONANT ELEMENTS IN WHICH DEMODULATION OF
A.C. SIGNALS IS NOT NEEDED HAVE BEEN DESCRIBED.
A CONSEQUENCE IS THE ELIMINATION OF THE CONTROL
WINDING ON THE INDUCTOR CORES. EACH OF THESE
SYSTEMS ALLOW ONE TO DEVELOP A SYSTEM OF CIRCUIT
LOGIC. IN CHAPTER 3, THE WORK PERFORMED ON THE
VARIABLE CAPACITANCE DIODE NONLINEAR RESONANT CIRCUIT
IS DESCRIBED. (U)

UNCLASSIFIED

JOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-698 197 9/2 9/8
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS MADRID
(SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMATICA
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL
DEVICES. (U)
DESCRIPTIVE NOTE: REPT. FOR 1 APR 58-21 MAR 59,
APR 59 194P SANTESHASES, J. GARCIA
REPT. NO. TN-2
CONTACT: AF 61(514)-1224

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-698 217 AND AD-698
189.

DESCRIPTORS: (*COMPUTERS, *MAGNETIC RESONANCE),
(*CONTROL SYSTEMS, MAGNETIC RESONANCE),
(*ELECTRICAL NETWORKS, MAGNETIC RESONANCE),
RELAXATION OSCILLATORS, MAGNETIC CORE STORAGE,
LOGIC CIRCUITS, SHIFT REGISTERS, INDUCTANCE,
COMPUTER LOGIC, DELAY CIRCUITS, MAGNETIC
PROPERTIES, BIBLIOGRAPHIES (U)

IN CHAPTER 1 THE LIST OF BIBLIOGRAPHY ON
FERRORESONANCE GIVEN IN TECHNICAL NOTE NO. 1
HAS BEEN EXTENDED TO SIXTY-FIVE PAPERS. CHAPTER 2
IS DEVOTED TO THE TESTS CARRIED OUT ON FERRITE
MATERIALS, THE REDUCTION OF THE SIZE OF CORES, AND
THE OBTENTION OF SHAPES MORE CONVENIENT FOR USE IN
FERRORESONANCE AT FREQUENCIES UP TO TEN MEGACYCLES.
IN CHAPTER 3 THE FERRORESONANT DEVICES ARE
DESCRIBED. WITH THE SERIES CIRCUIT WITHOUT
POLARIZATION AS A BASIS, COMPLETE SYSTEMS OF CIRCUIT
LOGIC HAVE BEEN DEVELOPED. THE DELAY UNIT, THE
HALF-ADDER, A SERIAL FULL ADDER, AND SOME OTHER
CIRCUITS WHICH MAKE USE OF THE OPERATING PRINCIPLES
OF THE DELAY UNIT AND HALF-ADDER, ARE DESCRIBED.
THE EXPERIMENTAL RESULTS PRESENTED HAVE BEEN
OBTAINED WITH A CARRIER FREQUENCY OF TWO MEGACYCLES,
AND PULSE REPETITION RATES RANGING BETWEEN 200,000
AND 200,000 PULSES PER SECOND. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-688 217 9/2 9/5
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS MADRID
(SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMATICA
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL
DEVICES. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE NO. 1, 1 APR 57-71
MAR 58,
MAR 58 160P SANTESHASES, J. GARCIA I
CONTRACT: AF 61(141)-1234

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-658 190 AND AD-658
189.

DESCRIPTORS: (*COMPUTERS, *MAGNETIC RESONANCE),
(*CONTROL SYSTEMS, MAGNETIC RESONANCE),
(*ELECTRICAL NETWORKS, MAGNETIC RESONANCE),
BIBLIOGRAPHIES, RELAXATION OSCILLATORS,
INDUCTANCE, LOGIC CIRCUITS, MAGNETIC CORE
STORAGE, WIRING DIAGRAMS, MATHEMATICAL ANALYSIS,
MAGNETIC PROPERTIES (U)

IN CHAPTER 1, A LIST IS GIVEN OF FIFTY NINE
PUBLICATIONS, WHICH DEAL WITH THE FERRORESONANCE
PHENOMENON AND ITS APPLICATION TO CIRCUITS USED IN
COMPUTERS. THE INFORMATION FOUND IN THEM WAS
CLASSIFIED INTO THREE GROUPS, NAMELY, FERRORESONANT
CIRCUIT ANALYSIS, FERRORESONANT FLIP-FLOP ANALYSIS,
AND EXPERIMENTAL FERRORESONANT CIRCUITS FOR
APPLICATION TO COMPUTERS. CHAPTER 2 IS INTENDED TO
ESTABLISH A FIGURE OF MERIT FOR MAGNETIC MATERIALS,
WITH RELATION TO FERRORESONANCE. FOR THIS PURPOSE,
CHARACTERISTICS WERE FIRST DETERMINED FOR THE SMALL-
SIZE CORES AVAILABLE, WORKING THEN IN TERMS OF
REDUCED CHARACTERISTICS WHICH ARE INDEPENDENT ON CORE
SIZE AND NUMBER OF TURNS. FINALLY, A NEW FIGURE OF
MERIT IS INTRODUCED, FROM CERTAIN CONSIDERATIONS ON
THE PHENOMENON OF FERRORESONANCE. IN CHAPTER 3,
WE GIVE SOME ORIGINAL RULES FOR TWO-BRANCH FLIP-FLOP
DESIGN, WORKING FROM DATA WHICH ARE EASILY OBTAINED
IN THE LABORATORY. ACCOUNT IS ALSO GIVEN OF
EXPERIMENTAL RESULTS OBTAINED ON TWO-BRANCH, NO-
POLARIZATION FLIP-FLOPS, AND FOUR-BRANCH RING
COUNTERS, OPERATING UNDER A SINGLE PULSE SEQUENCE.
IN ADDITION, A STUDY IS DEVELOPED OF THE ONE-BRANCH
FLIP-FLOP, WITH POLARIZATION, WORKING UNDER TWO PULSE
SEQUENCES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AQ-658 379 9/2
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LAB
A DIRECT BINARY DIVIDER FOR SPECIAL PURPOSE DIGITAL
COMPUTERS, (U)
JAN 61 15P ZINK, H. O. I
REPT. NO. CF-2916
CONTRACT: NORD-7286

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL COMPUTERS, BINARY
ARITHMETIC), (*COMPUTER LOGIC, *BINARY
ARITHMETIC), NUMERICAL METHODS AND PROCEDURES,
SHIFT REGISTERS, REAL TIME, ITERATIVE METHODS (U)
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE REPORT DESCRIBES THE DIVIDER CIRCUIT DEVELOPED
IN AN ATTEMPT TO SOLVE THE PROBLEM OF DIVIDING
WITHOUT USING ITERATIVE TECHNIQUES AND WITHOUT UNDULY
SLOWING DOWN THE COMPUTATION PROCESS OF A DIGITAL
COMPUTER. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-658 727 9/2 20/11
COLUMBIA UNIV NEW YORK DEPT OF MECHANICAL
ENGINEERING
THREE-DIMENSIONAL ELASTICITY THEORY FOR FLAT-PLATE
MEMORY ELEMENTS SUBJECTED TO SPACE-VARIABLE NORMAL
TRACTION.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 67 69P ELROD, H. G. 1500D, DES R.

REPT. NO. TR-9
CONTRACT: NONR-4259(14)
PROJ: NR-062-360

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MECHANICAL AND
FLUID DYNAMICAL ASPECTS OF PROBLEMS ASSOCIATED
WITH COMPUTER TECHNOLOGY. TASK 1, TAPE TRANSPORT.
SEE ALSO AD-802 009.

DESCRIPTORS: (*COMPUTER STORAGE DEVICES,
*ELASTICITY), BOUNDARY VALUE PROBLEMS, DIGITAL
COMPUTERS, STRESSES, STRAIN(MECHANICS), FLAT
PLATE MODELS, BENDING, MATHEMATICAL ANALYSIS

(U)

MANY OF THE CONTEMPORARY MEMORY ELEMENTS USED IN
HIGH-SPEED DIGITAL COMPUTERS ARE FLAT IN THE
UNSTRESSED STATE. THE PRESENT WORK IS PART OF A
REVIEW AND ENLARGEMENT OF APPLICABLE ELASTICITY
THEORY IN CASES OF SMALL DEFORMATION WITH SPACE-
VARIABLE NORMAL TRACTION OR PRESSURE. (1) ALL
FLAT PLATE RESULTS ARE DERIVED DIRECTLY WITH THREE-
DIMENSIONAL LINEAR ELASTICITY THEORY - NONE OF THE
CONVENTIONAL INTERMEDIATE ASSUMPTIONS BEING EMPLOYED.
(2) WITHIN THE EXACT THEORY, CERTAIN AUXILIARY
FUNCTIONS ARE SHOWN TO SATISFY CONVENTIONAL THIN-
PLATE DIFFERENTIAL EQUATIONS. IN TERMS OF THESE
FUNCTIONS, DISPLACEMENTS, STRESSES, STRESS RESULTANTS
AND COUPLES ARE SIMPLY EXPRESSED BY FORMULAS WHICH
ARE EITHER EXACT, OR ASYMPTOTICALLY ACCURATE.
BOUNDARY CONDITIONS ARE MATHEMATICALLY EQUIVALENT
TO THOSE OF MICHELL PLATE THEORY. (3)
SOLUTIONS OBTAINED FROM THE PRESENT THEORY ARE
'INTERIOR SOLUTIONS' IN THE SENSE OF FRIEDRICHS AND
DRESSLER (3) AND ACCOMMODATE KIRCHOFF EDGE
CONDITIONS. THEIR USE WITH MORE GENERAL EDGE
CONDITIONS WILL BE THE SUBJECT OF A LATER REPORT.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-659 264 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
USING AN APM-1 PRINTER AT THE COMPUTER OUTPUT, (U)
MAR 67 IOP KHODAKOV, V. E. ;
REPT. NO. FTD-HT-66-493
MONITOR: TT 67-62988

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
AVTOMATIKA I PRIBOROSTROENIE (USSR) N2 P31-3 1965.
PRIMENENIE PECHATAYUSHCHEI MASHINKI APM-1 V
USTROISTVAKH VYVODA VYCHISLITEL'NYKH MASHIN.

DESCRIPTORS: (INPUT-OUTPUT DEVICES,
COMPUTERS), (PRINTING, COMPUTERS),
ELECTROSTATICS, CONTROL SYSTEMS, COMPUTER LOGIC,
PERFORMANCE (ENGINEERING) (U)

THE DEVELOPMENT AND TEST RESULTS OF THE FIRST
SOVIET ON-THE-FLY PRINTER APM-1 ARE REPORTED.
THE HIGH-SPEED LINE PRINTER USES A CONTINUOUSLY
ROTATING PRINT WHEEL CARRYING 24 CHARACTERS; THEY ARE
SELECTED BY A 5-DIGIT BINARY CODE. FAST-ACTING
HAMMERS PRINT THE CHARACTERS. THE PRINTER IS
CONNECTED TO THE COMPUTER VIA A CONTROL UNIT WHICH
COMPRISES FERRITE-DIODE LOGICAL ELEMENTS AND
SEMICONDUCTOR AMPLIFIERS. FUNCTIONAL AND PRINCIPAL
CIRCUITS OF THIS UNIT ARE PRESENTED AND THEIR
OPERATION IS BRIEFLY EXPLAINED. DURING THE TWO-
YEAR OPERATION OF AN APM-1 ON-THE-FLY PRINTER
PROTOTYPE, NO FAILURE OF A MAJOR COMPONENT OCCURRED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-660 720 9/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
PUNCHED-TAPE DATA INPUT UNIT WITH CIRCUITAL
CONVERSION OF NUMBERS. (U)

APR 67 15P MAKHMUDOV, YU. A. IBEKIR-
ZADE, N. B. I
REPT. NO. FTD-HT-66-795

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
VOPROSY VYCHISLITENOI MATEMATIKI I TEKHNIKI (USSR)
V2 P161-70 1965.

DESCRIPTORS: (*INPUT-OUTPUT DEVICES; *PUNCHED
TAPE), COMPUTER STORAGE DEVICES, SPECIAL PURPOSE
COMPUTERS, USSR (U)

THE ARTICLE DESCRIBES AN INPUT DEVICE DEVELOPED FOR
ENTERING INFORMATION FROM PUNCHED TAPE IN THE WORKING
STORAGE OF A SPECIAL-PURPOSE COMPUTER AND PROVIDING
CIRCUIT DECIMAL-TO-BINARY CONVERSION. THE DEVICE
EMPLOYS SERIES-PRODUCED FERRITE-DIODE MAGNETIC
ELEMENTS. NUMBERS ARE RECORDED ON THE PUNCHED TAPE
IN THE CODE OF THE ST-29 APPARATUS. THE
CONVERSION SCHEME IS BASED ON AN ALGORITHM USING A
TABLE OF CONSTANTS. THE CONVERSION REPRESENTS THE
SERIAL ADDITION OF MULTIPLE CONSTANTS. THERE IS AN
INTERMEDIATE CONVERTER FROM THE ST-29 CODE TO
BINARY DECIMAL CODE. THE ARTICLE GIVES A BLOCK
DIAGRAM OF THE INPUT DEVICE, AS WELL AS A DETAILED
DESCRIPTION OF ITS BASIC CIRCUIT. THE CIRCUIT
SPEED PERMITS THE ENTRY OF 1,000 BITS (ROWS) PER
SECOND, WHICH MAKES IT POSSIBLE TO USE IT WITH THE
PHOTOELECTRIC METHOD OF PUNCHED TAPE READING. 196
ELEMENTS ARE USED TO CONSTRUCT THE DEVICE, INCLUDING
64 LOGICAL AND 92 SIMPLE ELEMENTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-660 792 9/2

OREGON STATE UNIV CORVALLIS COMPUTER CENTER
EVALUATION OF THREE CONTENT-ADDRESSABLE MEMORY
SYSTEMS USING GLASS DELAY LINES.

(U)

DESCRIPTIVE NOTE: DOCUMENT.

JUL 67 71P RUX, PETER T. I

REPT. NO. C-67-9

CONTRACT: NONR-1286(11)

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTER STORAGE DEVICES, DELAY
LINES), GLASS, DIGITAL COMPUTERS, COMPUTER
LOGIC, PERFORMANCE(ENGINEERING)

(U)

EVALUATION IS MADE OF THREE CONTENT-ADDRESSABLE
(ASSOCIATIVE) DIGITAL MEMORY SYSTEM ORGANIZATIONS
USING A CIRCULATING MEMORY. SPECIFIC REFERENCE IS
MADE TO GLASS DELAY-LINE MEMORIES SINCE THEY OFFER
THE BEST SOLUTION TO HIGH-SPEED CIRCULATING STORAGE.
THE MEMORY DESIGNS ARE EACH DEVELOPED AS A POSSIBLE
MEMORY ADDITION TO THE NEBULA COMPUTER AT OREGON
STATE UNIVERSITY. A USEFUL COMMAND SET IS
ESTABLISHED ALONG WITH A DISCUSSION OF APPLICATIONS
OF SUCH A MEMORY SYSTEM. THEN THE THREE SEPARATE
DATA ORGANIZATIONS ARE EXPLAINED AND THE LOGICAL
DESIGN AND HARDWARE REQUIREMENTS FOR EACH SYSTEM TYPE
ARE DETAILED AND COMPARED. A CIRCULATING MEMORY IS
UTILIZED BECAUSE IT ALLOWS VERY INEXPENSIVE
IMPLEMENTATION OF CONTENT-ADDRESSING CAPABILITY.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000296

AD-660 047 9/2 9/5
MELPAR INC FALLS CHURCH VA
DEVELOPMENT OF AN INPUT/OUTPUT TECHNIQUE FOR
INTEGRATED CIRCUIT SIMULATION COMPUTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT. JAN-DEC 66,
JUL 67 67P MCNEAL, RICHARD N. ;
CONTRACT. AF 33(615)-2449
PROJ: AF-6114
TASK: 611408
MONITOR: AMRL TR-67-74

UNCLASSIFIED REPORT

DESCRIPTORS: (+INPUT-OUTPUT DEVICES,
COMPUTERS), (+SIMULATION, COMPUTERS),
(+INTEGRATED CIRCUITS, COMPUTERS),
SERVOMECHANISMS, MODULATORS, ANALOG SYSTEMS,
LOGIC CIRCUITS, SHIFT REGISTERS,
PERFORMANCE(ENGINEERING), ANALOG-TO-DIGITAL
CONVERTERS, DIGITAL-TO-ANALOG CONVERTERS, COMPUTER
LOGIC (U)

AN INPUT/OUTPUT TECHNIQUE WAS DEVELOPED TO
INTERFACE BETWEEN INTEGRATED CIRCUIT COMPUTERS AND
SIMULATION SYSTEMS. FOUR GENERAL TYPES OF SIGNALS
ARE PROCESSED BY THIS INPUT/OUTPUT SYSTEM:
DISCRETE INPUTS, DISCRETE OUTPUTS, ANALOG INPUTS,
AND ANALOG OUTPUTS. THIS STUDY HAS DETERMINED THAT
INTEGRATED CIRCUITS ARE READILY ADAPTABLE TO
PERFORMING THE DIGITAL FUNCTIONS IN THE INPUT/OUTPUT
SYSTEM, BUT THE ANALOG SIGNAL CONVERSION REQUIREMENTS
OF THESE SYSTEMS ARE NOT WITHIN PRESENT LINEAR
INTEGRATED CIRCUIT CAPABILITIES. IT IS ANTICIPATED
THAT THE LINEAR INTEGRATED CIRCUIT DEVELOPMENT WILL
HAVE PROGRESSED TO THE POINT OF MAKING INTEGRATED
CIRCUIT CONVERTERS FEASIBLE WITHIN THE NEXT YEAR.
THE BASIC SYSTEM REQUIREMENTS AND THE OVERALL
SYSTEM REQUIREMENTS AND THE OVERALL SYSTEM DESIGN
TECHNIQUE FOR AN INPUT/OUTPUT SYSTEM ARE DISCUSSED IN
DETAIL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-662 361 9/2
HONEYWELL INC MINNEAPOLIS MINN SYSTEMS AND RESEARCH
CENTER
ASSOCIATIVE TECHNIQUES FOR CONTROL FUNCTIONS IN A
MULTI-PROCESSOR SIMULATION INVESTIGATION. (U)
DESCRIPTIVE NOTE: FINAL REPT. JAN-AUG 67,
NOV 67 147P GONZALES, R. GUNDERSON, D.
C. ITIMMONS, J. A. I
REPT. NO. 12039-FR1
CONTRACT: F30602-67-C-0173
PROJ: AF-3581
TASK: 359109
MONITOR: RADC TR-67-200

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA STORAGE SYSTEMS, CONTROL),
(+DATA PROCESSING SYSTEMS, DESIGN), COMPUTER
PROGRAMS, SUBROUTINES,
PERFORMANCE(ENGINEERING), SIMULATION (U)
IDENTIFIERS: MULTIPROCESSING, ASSOCIATIVE MEMORY,
ASSOCIATIVE PROCESSOR (U)

A SIMULATOR OF A 'MULTIPROCESSOR WITH ASSOCIATIVE
CONTROL' WAS DEVELOPED FOR PURPOSES OF EVALUATING AND
STUDYING THE USE OF ASSOCIATIVE MEMORIES FOR
EXECUTIVE CONTROL FUNCTIONS IN MULTIPROCESSORS. A
JOB GENERATOR WAS ALSO DEVELOPED TO PROVIDE A SOURCE
OF JOBS TO USE IN THE SIMULATION STUDIES. SOME
PRELIMINARY RESULTS WERE OBTAINED IN TERMS OF SYSTEM
EFFICIENCY AND REQUIREMENTS ON THE ASSOCIATIVE
MEMORIES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-662 762 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
INPUT AND OUTPUT DEVICES FOR ELECTRONIC
COMPUTERS,

JUL 67 8P BONDAREV, A. M. ;
REPT. NO. FTD-HT-23-842-67

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
STANDARTIZATSIYA (USSR) N2 P44-5 1964.

DESCRIPTORS: (•INPUT-OUTPUT DEVICES;
COMPUTERS), PUNCHED CARDS, PUNCHED TAPE,
STANDARDS, USSR

(U)

A NEW STANDARD IS EXTENDED HERE TO PUNCH-CARD AND
PUNCH-TAPE INPUT AND OUTPUT DEVICES FOR GENERAL-
PURPOSE ELECTRONIC COMPUTERS. THE NOTATION,
NOMENCLATURE AND CHARACTERISTICS OF THESE DEVICES ARE
SPECIFIED, AS ARE THEIR PRINCIPAL PARAMETERS:
TECHNICAL RATE OF LOADING AND EXTRACTION OF
INFORMATION IN START-STOP AND CONTINUOUS REGIMES;
CAPACITY OF THE LOADING MAGAZINE AND RECEIVING POCKET
FOR THE CARDS; TECHNICAL RATE OF PRINT-OUT FOR
SEQUENTIAL ALPHANUMERIC PRINTING, LINE-PARALLEL
ALPHANUMERIC PRINTING, AND LINE-PARALLEL DIGITAL
PRINTING. RULES ARE GIVEN FOR THE NUMBER OF DIGITS
IN A LINE, THE SPACING OF PRINT, AND CERTAIN OTHER
PRINT-OUT PARAMETERS. THE GOST (ALL-UNION
STATE STANDARD) 10525-63 ALSO SPECIFIES THE
DIGITS AND SIGNS WHICH SHOULD BE USED IN INPUT AND
OUTPUT DEVICES, ON LEAVING TO CUSTOMERS THE RIGHT TO
SET UP THEIR OWN COMBINATIONS OF THE SPECIFIED
SYMBOLS AND INTRODUCE NEW SIGNS. THE PURPOSE OF
THIS STANDARD IS TO ESTABLISH THE UNIFICATION AND
INTERCHANGEABILITY OF INPUT AND OUTPUT DEVICES.
STANDARDS FOR 'ALPHANUMERIC CODES FOR PUNCH
CARDS AND PUNCH TAPES AND PERFORATED TAPES.
THE SHAPES, BASIC PARAMETERS, SIZES AND
POSITIONS OF HOLES ON A PUNCH TAPE,' HAVE
BEEN DRAFTED AND APPROVED.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-662 792 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
COMPUTERS WITH CORE-DIODE ELEMENTS, (U)
JUN 67 14P MAKHMUDOV, YU. A. I
REPT. NO. FTD-HT-67-48

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF AKADEMIYA NAUK
AZERBAIDZHANSKOI SSR, BAKU, IZVESTIYA, SERIYA
FIZIKO-TEKHNICHESKIKH I MATEMATICHESKIKH NAUK, N6
P27-29 1964.

DESCRIPTORS: (MAGNETIC CORE STORAGE, DIGITAL
COMPUTERS), LOGIC CIRCUITS, COMPUTER STORAGE
DEVICES, MAGNETIC RECORDING SYSTEMS, VERY LOW
FREQUENCY, USSR (U)

THE AUTHOR DESCRIBES A DIGITAL COMPUTER DEVELOPED
AT THE COMPUTATION CENTER OF THE AZERBAIDZHAN
ACADEMY OF SCIENCES, USING SEQUENTIAL AND IN SOME
CASES PARALLEL-SEQUENTIAL UNITS. THE COMPUTER
EMPLOYS COMMERCIALY PRODUCED FERRITE-DIODE ELEMENTS,
OPERATING AT A LOW TIMING FREQUENCY (20 KCS).
THE ARTICLE DESCRIBES THE PRINCIPLES UNDERLYING
INDIVIDUAL UNITS OF THE COMPUTER, WHICH CAN BE USED
EITHER INDEPENDENTLY OR AS PARTS OF OTHER COMPUTER
SYSTEMS. ALL THE COMPUTER UNITS OPERATE WITH 24-
DIGIT BINARY NUMBERS (INCLUDING THE SIGN DIGIT)
WITH FIXED RADIX. THE UNITS DESCRIBED ARE A
UNIVERSAL ARITHMETIC UNIT OF SEQUENTIAL ACTION, THE
INFORMATION INPUT UNIT, THE EXTERNAL MAGNETIC TAPE
MEMORY, AND THE OUTPUT UNIT. THE COMPUTER EMPLOYS
A TOTAL OF 88 SIMPLE AND 90 LOGIC ELEMENTS. (U)

UNCLASSIFIED

DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-662 828 9/2 12/1
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
MATRIX COMPUTER FOR CALCULATING CORRELATION
FUNCTIONS.

(U)

JUL 67 14P ULIN, O. V. IPETUNIN, V.
K. I
REPT. NO. FTD-HT-22-820-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
AVTOMATICHESKII KONTROL I ELEKTRICHESKIE IZMERENIYA
(USSR) V2 P78-82 1964.

DESCRIPTORS: (+STATISTICAL FUNCTIONS, PROBLEM
SOLVING), (+DATA PROCESSING SYSTEMS, STATISTICAL
FUNCTIONS), APPROXIMATION(MATHEMATICS),
MAGNETIC CORE STORAGE, AMPLIFIERS, CORRELATORS,
USSR

(U)

A SEMI-AUTOMATIC CORRELATOR THAT USES A MATRIX
NETWORK FOR THE MULTIPLICATION OPERATION IS
DESCRIBED. THE SOURCE DATA IN THE FORM OF A
NUMERICAL TABLE IS INSERTED INTO THE CORRELATOR BY A
KEYBOARD DEVICE. THE CORRELATOR INCLUDES A
MULTIPLICATION MATRIX DESIGNED WITH SQUARE-LOOP
FERRITES, TRANSISTORIZED BLOCK GENERATORS AND
AMPLIFIERS, AND ALSO FERRITE-DIODE REGISTERS WITH A
COMPENSATING CORE IN EACH CELL. A BLOCK DIAGRAM
AND A PRINCIPAL CIRCUIT OF THE CORRELATOR ARE
PRESENTED, AND ITS OPERATION IS DESCRIBED. THE
MAXIMUM RELATIVE ERROR DEPENDS ON THE NUMBER OF
DISCRETE LEVELS IN THE MULTIPLICATION MATRIX. THE
CORRELATOR SPEED OF OPERATION IS DETERMINED BY THE
PRODUCT READ TIME: AVERAGE TIME OF ONE READING IS
0.1-0.15 SEC.

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UNCLASSIFIED

DDC REPO BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-663 603 9/2
MELLON INST PITTSBURGH PA
FELLOWSHIP ON COMPUTER COMPONENTS NO. 247. (U)
DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 6, 11 JAN-10 APR
52.
APR 52 93P BOWMAN, J. R. ISCHWERTZ, F.
A. IMILCH, A. IMOFFAT, R. ISIEINBACK, R. T. I

CONTRACT: AF 19(122)-276

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTERS, SCIENTIFIC RESEARCH),
ELECTRONIC SWITCHES, SILICON CARBIDES, SHEETS,
RUBBER, BONDING, NONLINEAR SYSTEMS, CRYSTAL
RECTIFIERS, LIGHT PULSES, DIGITAL SYSTEMS,
COMPUTER STORAGE DEVICES, OPTICAL EQUIPMENT,
CIRCUITS, ELECTROLUMINESCENCE, PHOSPHORESCENT
MATERIALS (U)

THE STORY OF THE SILICON CARBIDE FUNCTION SWITCH
AND FUNCTION SWITCH BLANKS IS RELATED IN SECTION
I OF THE REPORT. THE SECTION, ENTITLED
'NONLINEAR SWITCHING ELEMENTS', DEMONSTRATES
THAT THE ASYMMETRIC RESISTANCE CHARACTERISTICS OF
DIODE RECTIFIERS ARE NOT ESSENTIAL TO THEIR
APPLICATION AS SWITCHING ELEMENTS. AND THAT ANY TWO-
TERMINAL PASSIVE NETWORK POSSESSING A SUITABLE
SYMMETRIC, NONLINEAR, VOLTAGE-CURRENT CHARACTERISTIC
CURVE MAY BE EMPLOYED AS A SWITCHING ELEMENT.
SECTION V ON THE 'MORPHOLOGY OF ELECTRONIC
CIRCUITS' COMPRISES A DISCUSSION OF THE POSSIBILITY
OF USING FLAT SHEETS OF PASSIVE AND ACTIVE ELEMENTS
IN THE FABRICATION OF ELECTRONIC CIRCUITS. SECTION
II ENTITLED 'OPTICAL ELEMENTS FOR COMPUTERS'
SUMMARIZES CERTAIN ADVANTAGES TO BE GAINED BY
EMPLOYING LIGHT PULSES RATHER THAN ELECTRICAL PULSES
FOR THE HANDLING OF DIGITAL INFORMATION. EFFORTS
ARE UNDERWAY TO PRODUCE BISTABLE OPTICAL ELEMENTS FOR
THE STORAGE OF DIGITAL INFORMATION. SECTION III
IS A FIRST REPORT ON ACTIVITIES POINTED IN THIS
DIRECTION. SECTION IV DEALS WITH THE DESIGN AND
CONSTRUCTION OF A CODED-DECIMAL MULTIPLIER AND, MORE
GENERALLY, WITH A TECHNIQUE FOR THE STORAGE OF A
FUNCTION OF TWO VARIABLES. SECTION VI CONTAINS
SOME DATA ON THE SPECTRAL DISTRIBUTION OF THE LIGHT
EMITTED BY AN ELECTROLUMINESCENT PHOSPHOR.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-663 916 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
DEVICE FOR READING AND PRINTING ALPHABET DIGITAL
INFORMATION FROM PERFORATION CARDS(USP-1). (U)
AUG 67 17P SHTURMAN, YA. P. 1
REPT. NO. FTD-HT-66-582

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
NAUCHNO-TEKHNICHESKAYA INFORMATSIYA (USSR) NI P29-71
1965.

DESCRIPTORS: (+PUNCHED CARDS, +DATA PROCESSING
SYSTEMS), COMPUTERS, DIODES(SEMICONDUCTOR),
FERRITES, PROGRAMMING(COMPUTERS), INPUT-
OUTPUT DEVICES, PRINTING, TYPEWRITERS, CONTROL
SYSTEMS, RUSSIAN LANGUAGE, SYMBOLS, NUMBERS,
USSR

(U)

IDENTIFIERS: ALPHA-NUMERIC SYMBOLS

(U)

THE USP-1 MACHINE FOR READING ALPHANUMERIC
INFORMATION FROM PUNCHED CARDS AND PRINTING DECODED
INFORMATION ON PRINTER ROLLS IS DESCRIBED. CODE
FORMS, COMPATIBLE WITH THOSE USED FOR THE URAL-4
COMPUTER ARE SHOWN IN A TABLE. ABOUT 200 STANDARD
FERRITE-DIODE MODULES ARE USED IN THE READER-PRINTER
CONTROL SYSTEM CONSTRUCTION. THE FOLLOWING
FUNCTIONS ARE PERFORMED BY THE DEVICE: (1)
AUTOMATIC FEEDING AND RELAY OF PUNCHED CARDS, (2)
PRINTING OF ALPHANUMERIC TEXT, (3) RESETTING OF
INFORMATION REGISTERS AND TYPEWRITER CARRIAGE RETURN,
AS DESIGNATED BY THE PROPER CONTROL CODES ON PUNCHED
CARDS. OTHERWISE, CARRIAGE RETURN IS CAUSED BY
PRINTING IN THE RIGHT-MOST FIELD OF THE TYPEWRITER
PAPER ROLL. RELIABILITY CONTROLS ARE INSTALLED TO
STOP PRINTING AND READING IN CASE OF CERTAIN
MALFUNCTIONS. THE DEVICE IS CAPABLE OF HANDLING
BOTH RUSSIAN AND LATIN TEXT CHARACTERS, PLUS
SELECTED GREEK LETTERS, ARABIC AND ROMAN
NUMERALS, PUNCTUATION MARKS, ARITHMETIC AND OTHER
SYMBOLS, FOR A TOTAL OF 86 CHARACTERS IN ALL. THE
SAME CHARACTER DICTIONARY IS USED IN BOTH INPUT AND
OUTPUT MODES. PRINTER SPEED IS 10 CHARACTERS PER
SECOND. THE TYPEWRITER PAPER ROLL IS 170
CHARACTERS WIDE, AND THE TOTAL LENGTH OF THE ROLL IS
90 METERS. A BLOCK DIAGRAM OF THE FUNCTIONAL UNITS
OF THE DEVICE IS GIVEN. (AUTHOR)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-664 224 9/2
ILLINOIS UNIV URBANA DEPT OF COMPUTER SCIENCE
QUARTERLY TECHNICAL PROGRESS REPORT, JANUARY,
FEBRUARY, MARCH, 1967.
67 296P
REPT. NO. C00-1469-0071

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-621 991.

DESCRIPTORS: (COMPUTERS, SCIENTIFIC RESEARCH),
ELECTROOPTICS, PHOTOCONDUCTIVITY, CODING,
ELECTROLUMINESCENCE, ANALOG SYSTEMS, INTEGRAL
TRANSFORMS, TIME SHARING, INPUT-OUTPUT DEVICES,
SUBROUTINES, REMOTE CONTROL SYSTEMS, NUMERICAL
ANALYSIS, PROGRAMMING (COMPUTERS), LINEAR
PROGRAMMING, PROGRAMMING LANGUAGES, COMPUTER
LOGIC, FAILURE (ELECTRONICS), MAINTENANCE
IDENTIFIERS: LIGHT PENS, ILLIAC COMPUTER

(U)

(U)

CONTENTS: CIRCUIT RESEARCH PROGRAM; HARDWARE
SYSTEMS RESEARCH; SOFTWARE SYSTEMS RESEARCH
PROGRAM; ILLIAC IV; NUMERICAL METHODS, COMPUTER
ARITHMETIC AND ARTIFICIAL LANGUAGES; COMPUTATIONAL
PHYSICS; SWITCHING THEORY AND LOGICAL DESIGN;
ILLIAC II SERVICE, USE, AND PROGRAM DEVELOPMENT;
IBM 7094/1401 SERVICE, USE, AND PROGRAM
DEVELOPMENT; PROBLEM SPECIFICATIONS; GENERAL
LABORATORY INFORMATION.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-664 228 9/2

ILLINOIS UNIV URBANA DEPT OF COMPUTER SCIENCE
QUARTERLY TECHNICAL PROGRESS REPORT, APRIL, MAY,
JUNE, 1967.

(U)

67 296P
REPT. NO. C00-1469-0072

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-664 224.

DESCRIPTORS: (COMPUTERS, SCIENTIFIC RESEARCH),
PHOTOCONDUCTIVITY, EXCITATION, LIGHT PULSES,
CODING, GRAPHICS, PROGRAMMING LANGUAGES, TIME
SHARING, DIGITAL COMPUTERS, INPUT-OUTPUT DEVICES,
SUBROUTINES, SYNTAX, DATA STORAGE SYSTEMS,
NUMERICAL ANALYSIS, SYMBOLS, COMPUTER LOGIC,
PROGRAMMING (COMPUTERS), MAINTENANCE

(U)

IDENTIFIERS: ILLIAC COMPUTER

(U)

CONTENTS: CIRCUIT RESEARCH PROGRAM; HARDWARE
SYSTEMS RESEARCH; SOFTWARE SYSTEMS RESEARCH
PROGRAM; ILLIAC IV; NUMERICAL METHODS, COMPUTER
ARITHMETIC AND ARTIFICIAL LANGUAGES; COMPUTATIONAL
PHYSICS; SWITCHING THEORY AND LOGICAL DESIGN;
ILLIAC II SERVICE, USE, AND PROGRAM DEVELOPMENT;
IBM 7094/1401 SERVICE, USE, AND PROGRAM
DEVELOPMENT; PROBLEM SPECIFICATIONS; GENERAL
LABORATORY INFORMATION.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-666 152 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
A PUNCHED CARD READER, (U)
(CT 67 10P BUBEL, V. M. ;
KJSOBUTSKII, S. K. ;
REPT. NO. FTD-MT-24-287-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO.
USTROISTVO VVODA S PERFOKART, MINSK, 1965 P199-
63.

DESCRIPTORS: (*PUNCHED CARDS, *READING
MACHINES), DIGITAL COMPUTERS, INPUT-OUTPUT
DEVICES, RELIABILITY(ELECTRONICS), TESTS,
USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THIS PAPER DEALS WITH A NEW TYPE OF ON-LINE PUNCHED
CARD READER DESIGNED TO FEED DATA INTO THE PUNCHED
TAPE INPUT TERMINAL OF THE MINSK-1 COMPUTER. THE
CARD READER EXTENDS THE CAPABILITY OF THIS COMPUTER
BY PROVIDING AN ADDITIONAL MEANS OF INPUT.
STANDARD 48-COLUMN CARDS ARE USED AT A SPEED OF 100
CARDS PER MINUTE. THE INFORMATION IS READ IN A
SERIES-PARALLEL MODE. AN INTERNAL DECODER CONVERTS
THE DECIMAL DATA INTO 8-4-2-1 BCD CODE, COMPATIBLE
WITH THE PARTICULAR INPUT TERMINAL OF THE COMPUTER.
THE COMPUTER GENERATES APPROPRIATE CONTROL SIGNALS
UTILIZED IN THE CONTROL MODULE OF THE READER. A
SIGNAL IS FED INTO THE COMPUTER WHENEVER A WORD
BEGINS OR ENDS. FOR THE SERIAL OUTPUT OF THE
DIGITS, A SHIFT REGISTER IS USED CONSISTING OF
TRANSISTOR-FERRITE CORE ELEMENTS. A LABORATORY
MODEL WAS BUILT AND TESTED WITH SATISFACTORY RESULTS.
THE UNIT IS SMALL, SIMPLE, AND RELIABLE.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-667 750 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
REGISTER ON UNITRONS. (U)
SEP 67 10P KARMAZINSKII, A. N. ;
KHEIFETS, A. SH. IMALIN, B. V. ISONIN, M. S.
1
REPT. NO. FTD-HT-23-706-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
POLUPROVODNIKOVYE PRIBORY I IKH PRIMENENIE:
SBORNIK STATEI (USSR) N14 P196-210 1965.

DESCRIPTORS: (*SHIFT REGISTERS, USSR), FIELD
EFFECT TRANSISTORS, CIRCUITS, RELAXATION
OSCILLATORS, DIGITAL COMPUTERS, TRIODES,
SEMICONDUCTORS, DATA STORAGE SYSTEMS (U)
IDENTIFIERS: TRANSLATIONS (U)

A SHIFT REGISTER BASED ON FLIP-FLOPS CONSISTING OF
D-C-COUPLED FIELD-EFFECT TRANSISTORS IS DESCRIBED.
TWO VARIANTS, DIFFERING ONLY IN THE RESET CIRCUITS
FOR EACH FLIP-FLOP, WERE TESTED. THE TWO RESET
VARIANTS ARE SHOWN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-668 963 9/2 9/5
WASHINGTON UNIV ST LOUIS MO COMPUTER SYSTEMS LAB
A MACROMODULAR APPROACH TO COMPUTER DESIGN: A
PRELIMINARY REPORT.
DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 66 69P CLARK, WESLEY A. ;
STUCKI, MISHELL J. ; ORNSTEIN, SEVERO M. ;
REPT. NO. TR-1
CONTRACT: SD-202, ARPA ORDER-655

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIGITAL COMPUTERS, SYSTEMS
ENGINEERING), (*MODULES (ELECTRONICS),
DIGITAL SYSTEMS), DESIGN, LOGIC CIRCUITS,
INPUT-OUTPUT DEVICES, CONTROL SEQUENCES,
SUBROUTINES, DECISION MAKING,
GATES (CIRCUITS), FLOW CHARTING, DATA
PROCESSING SYSTEMS, NETWORKS, ADAPTIVE SYSTEMS,
ELECTRIC CONNECTORS, ASSEMBLING, MODIFICATION
KITS, OPTIMIZATION, STANDARDIZATION, GROWTH,
INTEGRATED CIRCUITS

(U)

IDENTIFIERS: *MACROMODULES, DATA
AVAILABILITY (COMPUTERS)

(U)

THIS IS A PRELIMINARY REPORT OF MACROMODULAR
SYSTEMS. THE MACROMODULES DESCRIBED ARE
RELATIVELY SMALL, DIMENSIONALLY MODULAR, STRUCTURALLY
SELF-SUFFICIENT BOXES WHICH CONTAIN ALL OF THE
REQUIRED ELECTRONIC CIRCUITS AND MEMORY ELEMENTS.
ELECTRICAL CONNECTORS ON THE FACES OF EACH UNIT
PROVIDE ALL POWER AND SIGNAL ACCESS. THE UNITS CAN
BE INTERCONNECTED MECHANICALLY AND ELECTRICALLY TO
FORM LARGER ASSEMBLAGES, AND STANDARDIZED CABLES ARE
PROVIDED FOR ALL INTER-ASSEMBLAGE COMMUNICATION.
ALL CONNECTORS ARE BACKED BY SIGNAL-STANDARDIZING
AMPLIFIERS CAPABLE OF DRIVING ANY ATTACHABLE MODULE
OR CABLE. DATA PROCESSING MODULES ARE ORGANIZED IN
PARALLEL BINARY FORM WITH WORD-LENGTH MODULUS OF 12
BITS, AND ARE DESIGNED FUNCTIONALLY FOR ASYNCHRONOUS
OPERATION. MEMORY MODULES HOLD 4096 12 BIT WORDS.
(THE NUMBERS 12, 4096, AND OTHER SUCH PARAMETERS
HAVE BEEN MADE SPECIFIC, FOR PURPOSES OF THIS REPORT,
ONLY TO SIMPLIFY DESCRIPTION.) THE DESIGN OF A
SYSTEM BASED ON THESE MODULES REQUIRES ONLY THE
EXERCISE OF LOGIC. THE OPERABILITY OF THE
RESULTING SYSTEM CANNOT BE ADVERSELY AFFECTED BY THE
PHYSICAL DISTRIBUTION OR ARRANGEMENT OF PARTS, THE
DISTANCE BETWEEN UNITS, THE NUMBER OR DIVERSITY OF
MODULES, OR THE ROUTING OF THE INTERCONNECTING
PATHWAYS. MACROMODULAR SYSTEMS ARE, AS A RESULT,

(U)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-668 964 9/2 9/9
WASHINGTON UNIV ST LOUIS MO COMPUTER SYSTEMS LAB
THE DESIGN OF A TAPE MACROMODULE. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 67 96P LITTLEFIELD, WARREN M. I
REPT. NO. TR-3
CONTRACT: SD-302, ARPA ORDER-699

UNCLASSIFIED REPORT

DESCRIPTORS: (+DIGITAL COMPUTERS, SYSTEMS
ENGINEERING), (+MODULES(ELECTRONICS),
+MAGNETIC TAPE), DATA STORAGE SYSTEMS, LOGIC
CIRCUITS, INTERFACES, TIMING CIRCUITS, CODING,
RELAXATION OSCILLATORS, PHASE, TEST METHODS,
INTEGRATED CIRCUITS, COMPUTER PROGRAMS, COMMAND
+ CONTROL SYSTEMS, WIRING DIAGRAMS, INPUT-OUTPUT
DEVICES, SUBROUTINES, COSTS (U)
IDENTIFIERS: +MACROMODULES,
DEBUGGING(ENGINEERING), LINC COMPUTER (U)

THIS REPORT DEALS WITH THE DESIGN AND FUNCTION OF A
MAGNETIC TAPE SYSTEM MODULE. THE PROTOTYPE WAS
BUILT OUT OF MECL INTEGRATED LOGIC AND USED IN THE
PULSE MANNER, AND HANDLES ALL THOSE FUNCTIONS
PECULIAR TO THE BASIC LINC TAPE TRANSPORT. THE
SYSTEM WAS INTERFACED AND DEBUGGED ON A LINC
COMPUTER WHICH WAS PROGRAMMED TO BEHAVE AS A
MACROMODULAR INTERFACE. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-669 277 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
USE OF SOEMTRON CALCULATOR-PUNCHED CARD MACHINES FOR
THE MECHANIZATION OF CONTROL OPERATIONS (ISPOLZOVANIE
SCHETNO-PERFORATSIONNYKH MASHIN 'SOEMTRON DLYA
MEKHANIZATSII UPRAVLENCHESKOGO TRUDA), (U)
JUL 67 14P KORPUS.M. I
REPT. NO. FTD-HT-23-916-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF MONO.
SREDSTVA I METODY MEKHANIZATSII PODGOTOVKI I
POISKA NAUCHNO-TEKHNICHESKOI INFORMATSII,
INZHENERNOGO I UPRAVLENCHESKOGO, MOSCOW, 1965 P207-13
1965, BY F. DION.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, PUNCHED
CARDS), (+PUNCHED CARDS, AUTOMATION),
PRODUCTION CONTROL, INPUT-OUTPUT DEVICES,
AUTOMATA, CONTROL SYSTEMS,
PERFORMANCE(ENGINEERING), USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE ARTICLE DISCUSSES THE PUNCHED CARD MACHINES
PRODUCED BY THE PEOPLE'S TYPEWRITER PLANT IN
SEMNERDA, WHICH ARE USED IN CONTROL WORK:
SOEMTRON 413 MAGNETIC PUNCH, SOEMTRON 423 MAGNETIC
VERIFIER, SOEMTRON 422 PUNCHED CARD SORTER,
SOEMTRON 440 SUMMARY PUNCH, SOEMTRON 402
TABULATOR, AND THE ASM 18 COMPUTER. SORTER S-
422 CAN SORT 42,000 PUNCHED-CARDS AN HOUR IN ANY
DESIRED NUMERICAL ORDER BY MEANS OF A BRUSH BLOCK.
TABULATOR 402 (GOLD MEDAL WINNER AT THE 1964
SPRING FAIR IN LEIPZIG) PROCESSES DATA ON 80-
COLUMN PUNCHED-CARDS AND IS USED IN PLANNING,
STATISTICS, COMPUTATION, AND SCIENTIFIC RESEARCH; IT
CAN HANDLE 9000 PUNCHED-CARDS AN HOUR. THE SUMMARY
PUNCH CAN HANDLE 6000 PUNCHED-CARDS AN HOUR. THE
ASM 18 COMPUTER CAN BE CONNECTED TO THE TABULATOR
402. THE ARTICLE DESCRIBES THE AUTOMATIC OPERATION
OF AN AGGREGATE OF THESE MACHINES, IN WHICH THE
TABULATOR PLAYS THE KEY ROLE IN THE FINAL PROCESSING
OF THE RESULTS OF THE ARITHMETIC AND LOGICAL
OPERATIONS OF THE OTHER MACHINES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-669 300 9/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
MEMORY DEVICE WITH EXTERNAL SELECTION
(ZAPOMINAYUSHCHEE USTROISTVO S VNESHNIM VYBOROM), (U)
SEP 67 11P SOROKIN, V. N. 1
VASHKEVICH, N. P. 1
REPT. NO. FTD-MT-24-130-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MOSKOVSKOE
VYSSHEE TEKHNIЧЕСKOE UCHILISHCHE. VYCHISTITELNAYA
TEKHNIKA (USSR) NO P91-7 1966.

DESCRIPTORS: (MAGNETIC CORE STORAGE, DESIGN),
FERRITES, ELECTRICAL PROPERTIES,
PERFORMANCE (ENGINEERING), DIGITAL COMPUTERS,
USSR

(U)

IDENTIFIERS: TRANSLATIONS

(U)

A HIGHLY RELIABLE TRANSISTORIZED TWO-CORES-PER-BIT
FILE MEMORY DESIGNED TO OPERATE IN DATA PROCESSING
CONTROL SYSTEMS IS DESCRIBED. IT CONSISTS OF: A
FERRITE-CORE STACK SERVING AS THE ACCUMULATOR STORE;
TWO ADDRESS REGISTERS; A SAMPLING CIRCUIT; A CIRCUIT
FOR GENERATING SAMPLING-CURRENT PULSES; WRITE DRIVERS
SERVING TO SHAPE POWERFUL CURRENT PULSES DURING DATA
RECORDING; AN OUTPUT SIGNAL AMPLIFIER; INPUT AND
OUTPUT REGISTERS; AN OVERWRITING CIRCUIT; AND THE
OPERATING-CYCLE CONTROL CIRCUIT. THERE ARE TWO
CORES PER BIT: A MEMORY CORE AND A SWITCH CORE.
THE MAXIMUM SWITCH TIME OF ANY CORE DOES NOT EXCEED
4 MSEC. THE MEMORY DEVICE IS POWERED FROM A 24 V
SOURCE. THE POWER REQUIREMENT OF THE ENTIRE DEVICE
IS ABOUT 100 W.

(U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-669 279 9/2
ARMED FORCES RADIOBIOLOGY RESEARCH INST BETHESDA MD
A TECHNIQUE FOR CONVERTING A KEY PUNCH INTO A
COMPUTER PUNCHED CARD READER. (U)
DEC 67 29P BROCATO, L. J. GITELMAN, J.
J. ROCKWELL, R. W. 1
REPT. NO. AFRR1-TN67-4

UNCLASSIFIED REPORT

DESCRIPTORS: (PUNCHED CARDS, DIGITAL
COMPUTERS); INPUT-OUTPUT DEVICES;
SYNCHRONIZATION(ELECTRONICS); COMPUTER
PROGRAMS, INTERFACES, COSTS (U)
IDENTIFIERS: KEY PUNCH MACHINE (U)

THE REPORT DESCRIBES A TECHNIQUE FOR CONVERTING A
KEY PUNCH INTO A PUNCHED CARD READER FOR USE WITH A
SMALL-SCALE SPECIAL PURPOSE COMPUTER SYSTEM. THE
DISCUSSION INCLUDES A SYSTEM DESCRIPTION, HARDWARE
MODIFICATIONS, SOFTWARE ANALYSIS AND A DESCRIPTIVE
SOFTWARE LISTING. (AUTHOR) (U)

UNCLASSIFIED

DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-669 419 9/2 4/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
AN IMMEDIATE-ACCESS BUFFER (MEMORY UNIT) FOR AN
ELECTRONIC COMPUTER (BUFERNOE OPERATIVNOE
ZAPOMINAYUSHCHEE USTROISTVO DLYA ELEKTRONNOI
VYCHISLITELNOI MASHINY), (U)
JUL 67 20P FEDOROV, V. A. I
REPT. NO. FTD-MT-24-128-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MIROVOI
METEOROLOGICHES-11 TSENTR, LENINGRAD. TRUDY (USSR)
NIO P103-11 1965.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, +COMPUTER
STORAGE DEVICES), (+WEATHER FORECASTING, DATA
PROCESSING SYSTEMS), DATA TRANSMISSION SYSTEMS,
CONTROL, MAGNETIC RECORDING SYSTEMS, MAGNETIC
TAPE, PUNCHED CARDS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

A BUFFER OPERATIONAL STORAGE DEVICE (BOZU) BASED
ON MAGNETIC OPERATIONAL STORAGE DEVICES AND BUFFER
COORDINATING UNITS IS USED TO OPERATE THE COMPUTER
COMPLEX FOR WEATHER FORECASTING AT THE SSSR WORLD
METEOROLOGICAL CENTER. THE BOZU PROVIDES
SIMULTANEOUS STORAGE OF INFORMATION FROM DIFFERENT
DEVICES WITH THE PROPER ORDERING AND PREPROCESSING OF
THIS INFORMATION. IT ALSO CONTROLS THE OPERATION
OF ALL DEVICES CONNECTED WITH THE COMPUTER. IN ONE
ARRAY OF THE COMPLEX THE UNIT AUTOMATICALLY RECEIVES
DATA FROM COMMUNICATIONS CHANNELS AND RECORDS IT ON
ONE OF SEVERAL BUFFER TAPES TO ABBREVIATE THE
COMPUTER INPUT PROCESS. THE SYSTEM CAN ALSO
PREDIGEST PUNCHED CARDS TO EXPEDITE THEIR INPUT.
THE BOZU ALSO ACCEPTS THE COMPUTER OUTPUT AND
EXPEDITES THE DISPATCH OF THIS INFORMATION TO SUCH
ASSOCIATED EQUIPMENT AS AUTOMATIC CHART PLOTTERS AND
WEATHER FORECAST TRANSMISSION CHANNELS. THE
COMPUTER TIME UTILIZATION IS SO EFFICIENTLY
COORDINATED THAT IN ONE OF THE MOST COMPLEX
OPERATIONAL MODES THE RECEIVING AND TRANSMITTING OF
INFORMATION FROM THE COMPUTER REQUIRES ONLY 30% OF
THE COMPUTER TIME, LEAVING THE REMAINING 70% FOR
COMPUTER ANALYSIS. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-8003 897 9/2
CARNEGIE INST OF TECH PITTSBURGH PA
MTHAT ASSEMBLER FOR THE CDC G-21.
DESCRIPTIVE NOTE: FINAL REPT.,
64 82P ROSS, DANIEL :
CONTRACT: SD-146
MONITOR: AFOSR 67-0256

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (INPUT-OUTPUT DEVICES, DIGITAL
COMPUTERS), PUNCHED CARDS, INSTRUCTION MANUALS,
DATA PROCESSING SYSTEMS, PROGRAMMING LANGUAGES,
COMPUTER STORAGE DEVICES, COMPUTER LOGIC,
CODING, OPERATION
IDENTIFIERS: MTHAT, ASSEMBLER (COMPUTERS), G-
21 COMPUTERS

(U)

(U)

MTHAT IS A ONE-PASS SYMBOLIC ASSEMBLER FOR THE
CDC (FORMERLY SENOIX) G-21 COMPUTER. IT IS
DESIGNED TO BE USED IN CONJUNCTION WITH THE
CARNEGIE TECH G-21 MONITOR SYSTEM. THE INPUT
TO MTHAT IS A SET OF PUNCHED CARDS, OR THE IMAGES
OF PUNCHED CARDS OBTAINED FROM EITHER THE G-21
CONTROL CONSOLE OR THE REMOTE TELETYPE UNITS. THE
OUTPUTS ARE G-21 MACHINE CODE IN THE COMPUTER
MEMORY, USUALLY ONE WORD OF CODE FOR EACH CARD INPUT,
AND A PRINTED ASSEMBLY LISTING. THERE ALSO ARE
PROVISIONS FOR COMMUNICATION BETWEEN MTHAT AND AN
OPERATOR OR PROGRAMMER AT THE G-21 CONTROL CONSOLE.
MTHAT IS CALLED A ONE-PASS ASSEMBLER BECAUSE
USUALLY EACH INPUT CARD IS PROCESSED ONCE ONLY.
(AUTHOR)

(U)

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